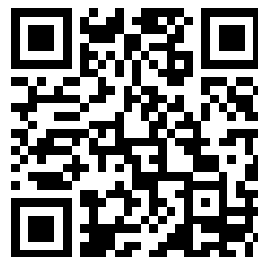
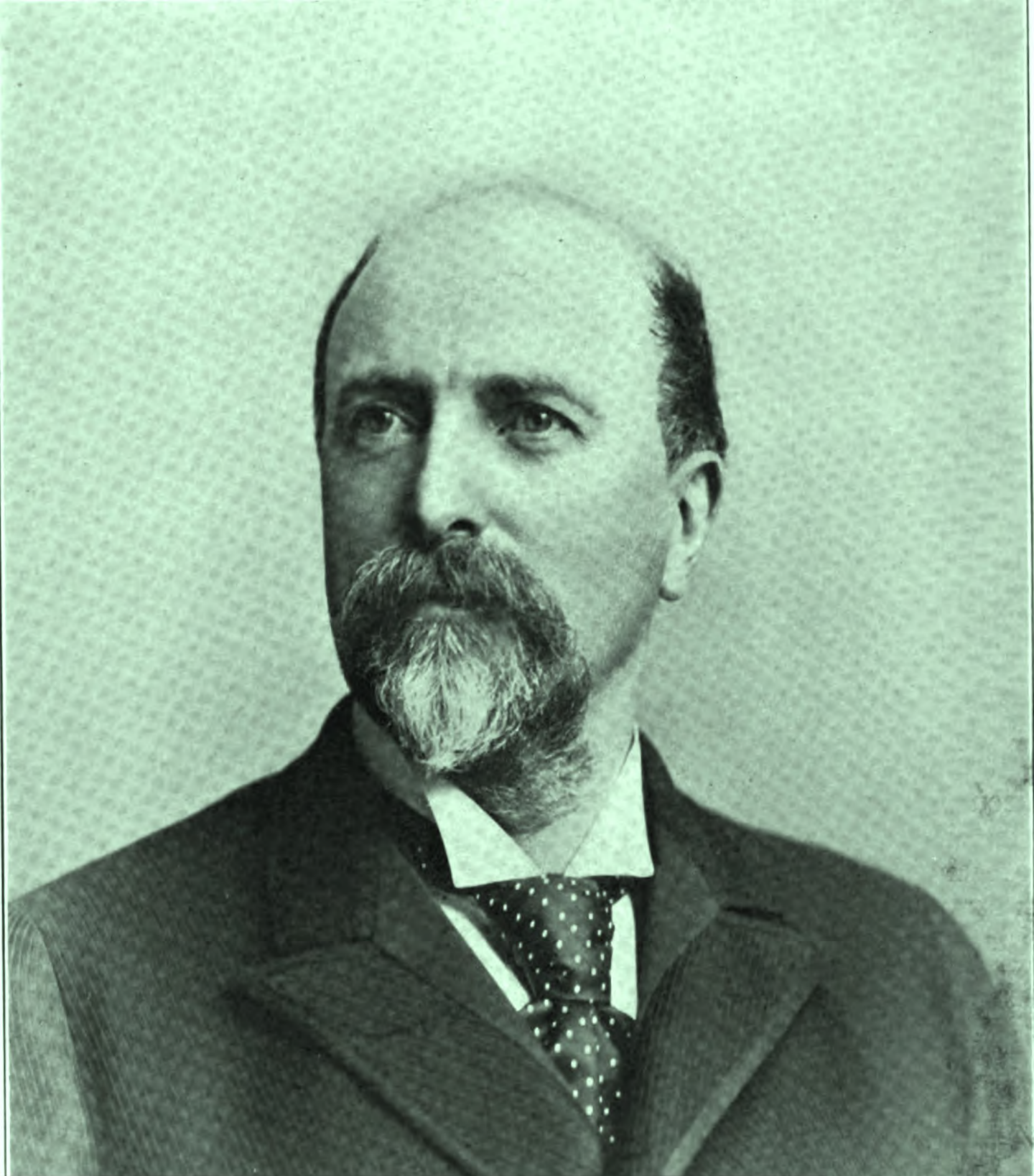

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TELEGRAPH AGE

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NEW YORK, JANUARY 1, 1906.

Whole No. 543.



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SOME POINTS ON ELECTRICITY.

The Telephone—First Principles.

BY WILLIS H. JONES.

(Concluded)

In the preceding installment of this article, published December 16, we described the mechanical and electrical operation of the simplest known method of telephony—the magneto system—wherein the battery power is created in the telephone coils and main line by the co-operation of the voice, metal diaphragm and steel magnet of the of the so-called “receiver.”

In this system the telephone acts in a double capacity. When spoken into it becomes a transmitter and transforms the mechanical force imparted to the diaphragm by the voice into electric impulses in the line and coils of both the home and distant telephone.

At the listener's end of the circuit the electric impulses flowing through the telephone are re-transformed into mechanical force by means of the metal diaphragm there, which they set in motion and thus create the air waves which reproduce the voice.

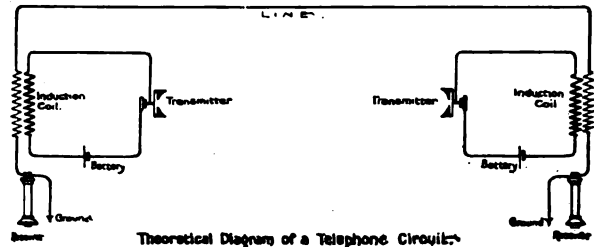
So far as the system of telephony is concerned the foregoing description covers the entire prin-

ciple of operation. The various types of apparatus employed, and line arrangements, are but different methods of avoiding or overcoming harmful conditions.

LONG DISTANCE TELEPHONY.

The term “long distance” applies properly to all circuits that are too long in mileage or ohmic resistance to be successfully operated by the comparatively feeble current a telephone receiver, used as a transmitter, is capable of generating. Hence, for circuits of this class a special transmitting device is required. The principle upon which the device is constructed is based on the following facts:

A telephone in operation is a true little dynamo, the coils representing the armature, and the steel magnet creating the “field.” This being the case, the method followed to increase the cur-



rent-producing power of the telephone is practically the same as that employed in regulating the electromotive force of an ordinary dynamo. That is to say, the end is attained by increasing the number of magnetic lines of force which are altered per second of time; in other words, by creating a stronger magnetic “field” and thus permitting of a wider range in the degrees of alterations.

As the number of magnetic lines of force capable of being altered in an ordinary telephone receiver is a fixed value limited to the comparatively feeble magnetism contained in the steel bar, its transmitting power is, therefore, impotent except for short circuits. In order to increase the transmitting power for the operation of longer circuits it is necessary to provide a much greater number of lines to alter.

Now, magnetic lines of force may be obtained in any degree of density by regulating the volume of current producing them. Hence, if we construct a local circuit containing a coil of wire surrounding an iron core, almost any strength desired is possible. If, now, we connect in this local circuit a telephone mouthpiece containing

a metal diaphragm, as shown in the accompanying diagram, so arranged that the vibrations of the latter cause alterations in the value of the resistance of the local circuit to occur, the strength of the current therein and, consequently, the number of lines of force will also be varied in like degree.

In the long distance transmitter the strength of the "field," or the line conductor's battery power-creating agent, is increased to the desired value by means of the current flowing through the coils of a magnet connected in a local circuit. The greater the volume of current given this local circuit the greater will be the available number of magnetic lines altered by the vibrations of the diaphragm in the mouthpiece.

As the coils of the home telephone, in this case, are not expected to act as a transmitter, an additional coil of insulated wire is connected in series with the main line conductor and substituted for the former. This latter coil is placed in the transmitter, being wound over the coil in the local circuit. One iron core serves for both windings. The combination thus becomes what is known as an induction coil. The under coil usually consists of but a few turns of coarse wire and is called the "primary." The local battery current flows through this coil.

The line coil is called the "secondary," and is wound with a much finer wire in order to obtain a greater number of convolutions and thereby increase the electromotive force developed in that coil.

It will thus be seen that the "secondary," or line coil, instead of the telephone, now becomes the armature of the "dynamo," as is the case in the original method, while the primary coil and local battery current, instead of the steel magnet, creates the "field." The operation of the long distance transmitter is as follows:

When the speaker's voice causes the thin metal diaphragm in the mouthpiece of the transmitter to vibrate, the alterations in the position of the metal creates an imperfect contact in the local circuit connections, thereby rapidly altering the value of the resistance and consequently the volume of current flowing.

As the imperfections of contact vary in degree in accordance with the timbre of the speaker's voice impressed on the diaphragm, the strength of the current in the local circuit varies in like manner. Hence, the resulting alterations going on in the primary or "field" coil of the transmitter develop identical "induced" currents in the "secondary" or line coil, and thus convey the speaker's voice, electrically, to the coils of the distant telephone receiver, where it is reproduced in the usual manner.

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Fast and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March

16 to April 16, inc.; June 1 to July 16, inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Chessan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power from the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16.]

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

The Railroad.

The Telegraph Signal Company, of Rochester, N. Y., was incorporated at Albany, December 5, 1905, with a capital of \$1,000,000, the purpose being to manufacture an electrical device by which semaphores at various points along a railroad may be operated from the dispatcher's office in case of accident or omission of any operator along the line to attend to his duty. The directors are J. G. Halleran and J. McGarvey, of Rochester, and M. J. Stover, of Morton, N. Y. The device is the invention of S. A. Wright, of Morton.

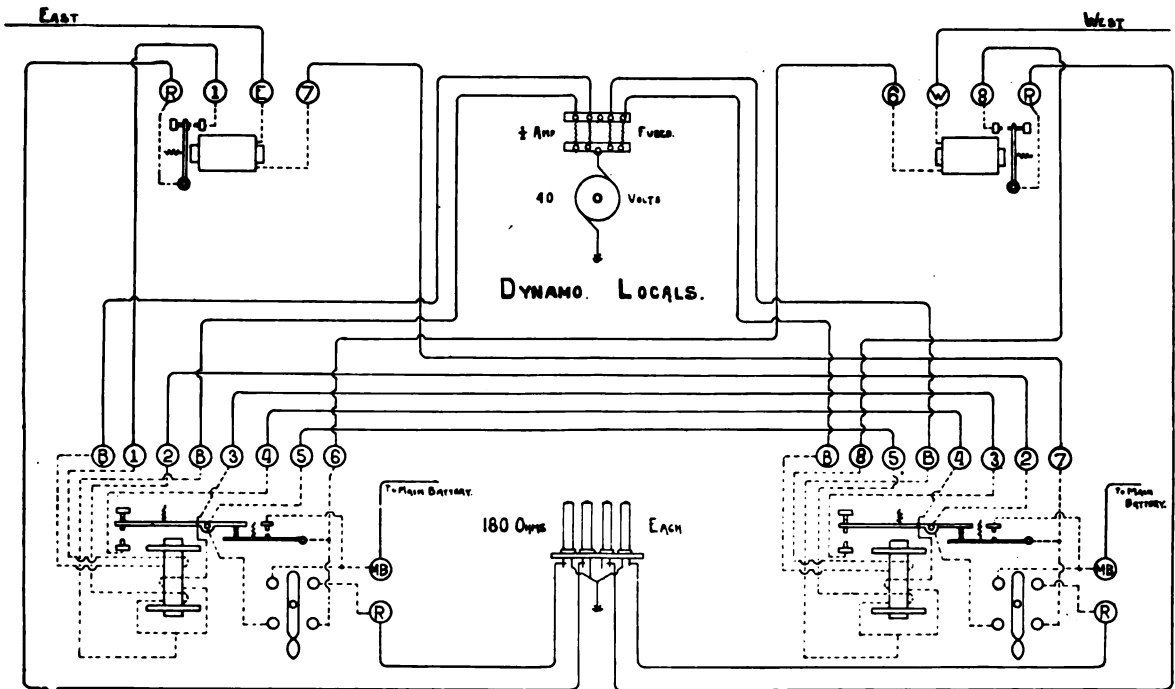
An instance of rapid and continuous advancement for merit through the several grades in the railroad service is afforded in the career of Wallace G. Collins, of Chicago. In 1873 he was appointed from the position of a telegraph operator to be assistant train dispatcher on the Chicago, Milwaukee & St. Paul Railway. In close sequential order he subsequently filled the following positions: Train dispatcher, assistant superintendent, division superintendent, assistant general superintendent, general superintendent, general manager, resigning from the railway service in 1900 to accept the vice-presidency of the Illinois Tunnel Company and the presidency of the Chicago Warehouse & Terminal Company.

Mr. C. H. Gaunt, of Topeka, Kan., superintendent of telegraph of the Atchison, Topeka & Santa Fe Railway, has, in addition to that office, been appointed assistant general manager of the company, effective December 20, 1905, his headquarters continuing to be at Topeka. Mr. Gaunt, who is not yet thirty-nine years of age, reflects the best element in the telegraph service. Only a few years ago he was an operator in New York for both the Western Union and Postal telegraph companies. Going West, his subsequent career has been on a rapidly advancing scale. Possessed of an excellent fund of information, practical, of indomitable energy, an engaging personality, and a studious mind, he seems destined to reach the top. His early education was gained in Brooklyn.

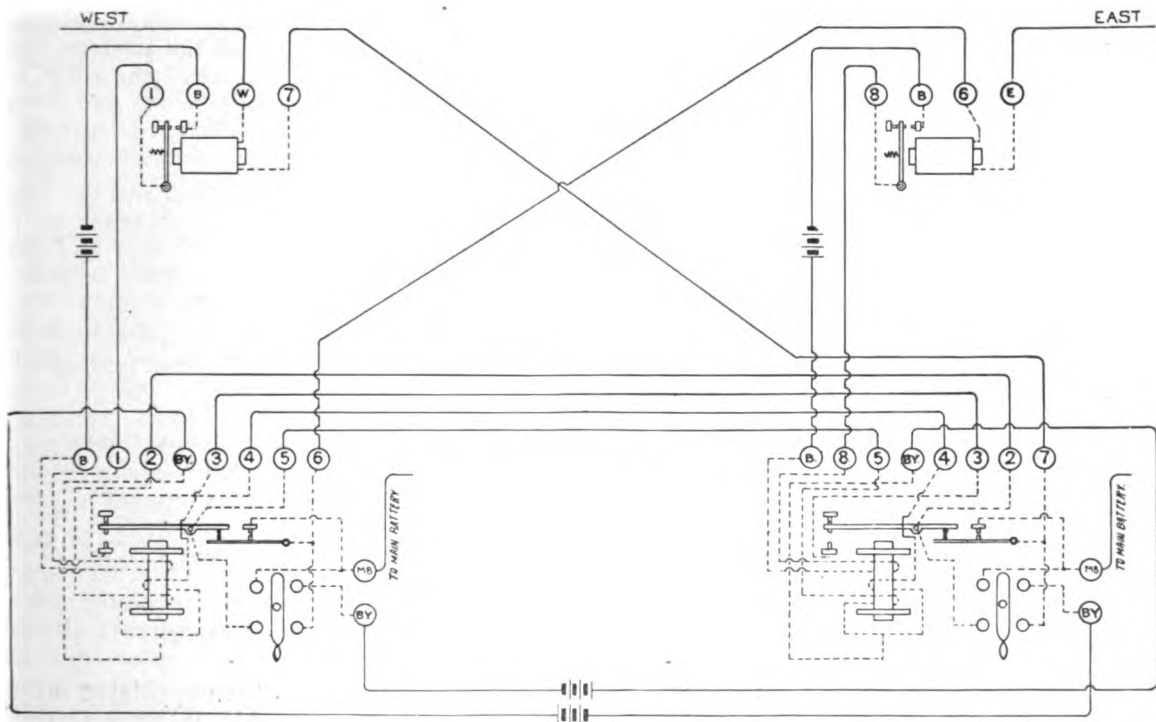
The Jones Repeater.

Mr. Francis W. Jones, electrical engineer of the Postal Telegraph-Cable Company, New York, was granted recently letters patent, No. 806,412,

the certainty of operation of such repeaters and reduce the expense of the instruments. This is accomplished by arranging two single or repeater transmitters, so that they will embrace all the



F. W. JONES REPEATER, SHOWING DYNAMO LOCALS.



F. W. JONES REPEATER, SHOWING BATTERY LOCALS.

for an automatic telegraph repeater for single Morse wires, the object of which is to increase

functions necessary for the purpose. The only change made in the present style of transmitters

is to provide their electromagnets with three convolutions instead of one. These transmitters are used with any ordinary Morse relays.

The advantages claimed by Mr. Jones are that any adjustment made upon the main line relay will in no manner affect the holding power applied to the opposite transmitter, also that supplementary holding magnets are dispensed with, and in case of damage to the relay by lightning, etc., a workable relay can be more readily substituted than one having any special magnets or attachments. The diagrams will more fully show the extreme simplicity of the system.

Recent Telegraph Patents.

A patent, No. 806,769 for an adjustable support for telegraph line wires, has been awarded to Jasper N. Bell, of Stratford, Iowa. An insulator for telegraph line wires is composed of two parts of rigid insulating material semicircular in cross-section, fitted together to produce a short tube having a longitudinal bore in its center extending from end to end to admit a wire conductor.

A patent, No. 806,812, for a double jack for telegraph circuits, has been obtained by Ola Johnson, of Conway Springs, Kan. The associated parts are a relay, a main circuit connected therewith for energizing it, a local circuit connected with the relay, a double jack connected with both the main circuit and the local circuit, a key and a sounder connected with the jack and main and local wiring connected with the jack, the local wiring containing an extra sounder to be energized in lieu of the first-mentioned sounder.

A patent, No. 806,884 for a telegraphic repeater, has been taken out by Stephen D. Field, of Stockbridge, Mass, assignor to John J. Ghegan, Newark, N. J. A duplicate and a main line contain a relay, a circuit-controlling device being actuated by the relay, which controls line and local contacts of the opposite set. The relay is also adapted to operate the line contacts before the local contacts. Means for accelerating the movement of the relay-armature when the opposite controlling device closes the line of contacts are provided.

A patent, No. 806,891, for a telegraphic apparatus, has been secured by Melville A. Hawley and William L. Rhoads, of St. Louis, Mo. Combined with a relay having the main-line magnets and armature for shunting the circuit of a local battery are an auxiliary magnet and a secondary springy armature fixed to and insulated from the main armature. The free end of the secondary armature is extended beyond the corresponding end of the main armature and adapted to make and break contact with an adjustable contact point in the main-line circuit for directly repeating and transmitting signals into the opposite line.

A patent, No. 806,801, for a telegraph repeater, has been issued to Oscar C. Greene, of St. Paul,

Minn., and Charles H. Gaunt, of Topeka, Kan. Associated with two main telegraph lines and their relays are a pair of repeating sounders, the magnet of each sounder having two different windings. One winding forms a permanently closed and energized local circuit and the opposite winding forms a local circuit through one of the contact points of the adjacent relay and one of the contact points to the other repeating sounder. By this arrangement the armature of the sounder upon the outgoing side will open or close the local circuit of the opposite sounder, which passes through the contact point of its relay.

Personal Mention.

Miss Lelia Morse, a granddaughter of the famous inventor of the telegraph, will spend the winter in Washington with Mr. and Mrs. Edward Lind Morse. Miss Morse has spent the past two seasons in New York, where she has met with success as a singer.

Mr. I. McMichael, vice-president and general manager of the Great North Western Telegraph Company, Toronto, Ont., was in New York a few days since, while en route to Florida, where he has a modest orange grove and where his family are spending the winter, as is their custom. He will pass a week or two with them.

The Cable.

The Federal Senate of Australia, has ratified the agreement concluded by the Commonwealth Government on June 8, 1903, with the Eastern Extension Co., conferring on the latter the right for a term of years to have special wires and to open offices apart from the Government telegraph station, and bestowing certain other advantages.

The dispute between Venezuela and the French Cable Company is now likely to cease to be a diplomatic question between France and Venezuela, in view of President Castro's withdrawal of the counter protest which he made to France in answer to the French complaint of his treatment of M. Taigny, the French Charge d'Affaires at Caracas.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Miss Grace P. Newton has severed her connection with the Grand Rapids, Mich., office.

Mr. W. W. Stiver has been appointed manager at Meyersdale, Pa., vice Miss Agnes Sellmer, resigned.

Mrs. E. G. Young has been appointed manager at South Fork, Pa., vice Mr. R. F. Deckross, resigned.

Mrs. F. M. Merryfield, one of the most expert lady telegraphers in the United States, and who for many years had charge of the repeaters at

Cheyenne, Wyo., has been appointed manager of the office at Durango, Colo., vice W. T. Davis, resigned to go into other business.

Mr. J. C. Scheffer, of Albert Lea, Minn., has been appointed manager at Billings, Mont., vice Robert Foster, who has resigned to go to St. Louis.

Mr. E. H. Krunzuch, of Jamestown, Dakota, has been appointed manager at Anaconda, Mont., vice Mr. C. J. Munger, resigned to go with the Standard Publishing Company, of that place.

Mr. J. R. Kearns, manager at Gloucester, Mass., has been promoted to the management of the Portland, Me., office, vice K. P. Ruggles, resigned on account of ill health. The vacancy at Gloucester has been filled by the promotion of J. F. Haas, who goes to that point from North Adams, Mass., at which place the managership has been filled by H. B. Simons, of Chelsea, Mass., where he is succeeded by W. Foden.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. Joseph Coffey has resigned the managership of the office at Hot Springs, Ark., to engage in the brokerage business.

Mr. J. W. Mayers has been appointed manager of the Postal Telegraph-Cable Company at Santa Fe, N. Mex., vice H. T. Gibson, resigned.

Mr. A. M. Beatty, manager at Knoxville, Tenn., has been advanced to the Atlanta, Ga., management, vice J. E. Scofield, resigned to enter other business.

General Mention.

The Southern Bell Telephone Company has increased its capital from \$1,000,000 to \$30,000,000.

Beginning January 1, night messages for transmission will be accepted by both telegraph companies as late as two o'clock A. M., instead of twelve o'clock, midnight, as formerly.

Mr. E. B. Barbee, of Fort Egbert, Alaska, in submitting to cover a renewal of his subscription, says: "I find I cannot do without TELEGRAPH AGE as its receipt is a great comfort to me in the frozen North."

Each clerk and check-boy of the operating department of the Western Union Telegraph Company, St. Louis, received as a Christmas present from the operating staff, the sum of \$2 and a box of candy.

Among recent visitors at the office of the Postal Telegraph-Cable Company, San Francisco, Cal., were Mr. Neil Primrose, son of Lord Rosebery, London, who is making a tour of the United States and Canada, and Mr. Elwood Hosmer, son of C. R. Hosmer, of the Canadian Pacific Railroad, Montreal, Que.

The largest of the newspapers printed on the

ocean and given free to the passengers is the Atlantic Daily News, printed on board of the new Hamburg-American liner the Amerika. Its daily editions are printed in both the English and German languages, the news being received constantly by wireless telegraph.

Mr. Clement Lee, New York superintendent of the Direct United States Cable Company, is distributing its day pad calendar for 1906. The pads are fixed upon a cardboard on which appears in addition to the name of the company, the addresses of its offices both in America and Great Britain. The calendar is arranged for the wall or the desk.

Mr. B. A. Cratsley, who was recently appointed manager at Springfield, Mass., of the Western Union Telegraph Company, was the recipient on Christmas day of a handsome leather covered chair given by the office force as a mark of the esteem held for that gentleman. Before going to Springfield Mr. Cratsley was connected with Superintendent Clary's office at Hartford, Conn.

The General Committee at New York, having in charge the collection of funds from various parts of this country for the amelioration of the existing condition of the Jews in Russia, state that their work has been greatly facilitated by the courtesy of the Western Union and the Postal telegraph companies in extending to them the privilege of free transmission of messages, in connection with their efforts in the direction indicated.

The electrical show, which opens at the Coliseum, Chicago, on Monday evening, January 15, and which is to be continued for two weeks, promises to offer an exposition of electrical apparatus such as to afford visitors a pretty comprehensive idea of the development of electrical science, and of the multiplicity of ways in which electricity serves mankind. It is expected that a wireless telegram to be received from President Roosevelt, will be the signal for the opening of the exhibition, marked by the sudden bursting into glow of thousands of electric lights. It is said that greetings will come in an aerogram from Thomas A. Edison.

The Standard Underground Cable Company has leased the exclusive use of an all-copper line to connect its general office and factories at Pittsburgh, branch offices at New York and Philadelphia and its eastern factories at Perth Amboy. This private line will be available for either telegraph or telephone service. There could be no better evidence of the large aggregate volume of business and the growing condition of this important manufacturing company; for so far as known this will be the longest exclusive wire owned or operated by any company confining itself to the manufacture of copper wire and cables. The service will be in effect January 1, 1906, and while without doubt of great convenience and

value to the company in facilitating communication between its offices and factories and the important market centres of New York, Philadelphia and Pittsburg, it is installed primarily to enable it to place itself in closer touch with its customers and to give these customers the same quick service that would be possible if its general offices were located in each of these cities instead of in one.

There is now opportunity to judge of the value of the telegraph through a negative demonstration. The Russian empire has been practically isolated from the outside world for nearly a month through a strike of telegraphers having inception in the revolutionary movement against the government. If ever the struggling rulers of that country needed the telegraph it is now. Heretofore the government has been in control of the wires and the censor could smile at the futile efforts of revolutionaries who were working in haphazard fashion because they had no means of quick communication. Now the government seems to be struggling in the dark because the wires are practically down.

Mr. W. L. MacLellan, at one time a prominent operator in New York and Portland Ore., but now associated with the banking house of Marshall, Spader & Co., New York, is representing that firm at Jacksonville, St. Augustine and Palm Beach, Fla., with headquarters at the latter place. In a letter received lately, requesting a change of address, Mr. MacLellan writes: "It seems so long since I really got down and 'pounded brass' that I much regret having lost some interest in the profession, but whenever I do get hold of a news item of some old friend, I take as keen a relish in it as ever and it is just for that wish for old memories that I now take TELEGRAPH AGE and, let me say, always will as long as it is under your care."

We have received from the author, Louis de Goll, and bearing the imprint of the Rowland Telegraphic Company, of Baltimore, an intelligently prepared and interesting brochure of thirty pages bearing the title of "The Italian Telegraph System." The telegraph and the conditions thereof, mainly as they exist in Europe, largely in England, and more briefly in Italy, are pointedly outlined, the deduction being drawn therefrom that machine telegraphy is now the one thing required to further promote and perfect European telegraphic conditions, a conclusion in which the reader is led to infer that the initiative in such a move is being contemplated by Italy in the introduction of the Rowland system in that country. The subject is cleverly presented and by an altogether ingenious writer.

Wireless Telegraphy.

A patent, No. 806,966, for a wireless telegraph system, has been obtained by Lee De Forest, of New York.

An object lesson in the practical use of wireless telegraphy was afforded recently. The Nantucket lightship, at sea, was in distress and by wireless telegraphy was able to call for help. Only the single signal was given, however, and then it stopped. The wireless telegraph station at Newport caught the call and a relief boat was started to aid the distressed ship. Further than that, communication was established with ships at sea, telling them of the distress of the lightship. This put other ships on their guard against depending on the light that ought to have been on the lightship. The crew were rescued by a relief ship but the lightship itself was lost.

The value of wireless telegraphy to ships threatened with danger at sea was demonstrated lately when the French liner La Lorraine arrived at New York after having successfully steered around a gigantic iceberg she had been informed lay directly across her path. The iceberg was described as being fully a quarter-mile in length and extending about 150 feet above water. When last seen the floating ice island was riding the waves directly in the line of the great Atlantic liners. La Lorraine had been signaled at sea by the American liner Philadelphia and she, in turn, passed the word to all the other outgoing and incoming liners within reach of her wireless telegraph apparatus.

Bids were recently opened in the Navy Department at Washington for furnishing ten sets of wireless telegraph apparatus for the navy, intended for stations mainly on the Pacific Coast, the following propositions being received: Clark Electrical Engineering Company, \$9,468; Massie Wireless Telegraph Company, \$15,000; De Forest Wireless Telegraph Company, \$25,100; International Telegraph Construction Company, \$48,300; Ostheimer Brothers, \$67,950; Marconi Wireless Telegraph Company, \$175,600; National Electric Signaling Company, \$393,500. The contract was awarded to the Massie Wireless Telegraph Company. The Stone Telephone and Telegraph Company made a proposition for a test of its method, which trial took place recently under the direction of the Bureau of Equipment. It is understood that one of the ten sets will be installed at the Washington navy yard, and the others will be set upon the Pacific Coast. The Navy Department will purchase the material and make the installation. The Bureau of Equipment regards the price of the successful bidder as entirely reasonable, considering the guarantee of efficiency exacted of bidders.

"Pocket Edition of Diagrams," etc., the latest revised edition, 334 pages and 160 illustrations, published by TELEGRAPH AGE, contains just the information every telegrapher requires, irrespective of his position.

Orders for books on telegraphy, wireless telegraphy, telephony, all electrical subjects, and for cable codes, will be filled by TELEGRAPH AGE on the day of receipt.

The History, Manufacture and Properties of Drawn Copper Wire.

BY THOMAS B. DOOLITTLE,
IN THE HARVARD ENGINEERING JOURNAL.

That the adaptation of a well known principle to meet conditions sometimes leads to important results is well illustrated in the story of the raising of the obelisk in the Piazza di San Pietro, Rome. The populace were commanded under penalty of death to keep silent. At a critical moment, when the obelisk had nearly reached a perpendicular position, the ropes proved too long. A sailor cried out: "Aqua alle funi" (wet the ropes). This was done, and the shrinking of the ropes set the obelisk squarely on its base. It will be remembered that the sailor (Bresca) received a reward instead of the penalty.

Hard drawn copper wire was the result of an adaptation rather than a discovery, although many of its valuable properties were not appreciated until after it had been in service several years.

It is the common knowledge of all who are familiar with the manipulation of copper that the process of drawing it into wire serves to harden the surface. Thus it will be seen that the experiments which resulted in the so-called hard drawn copper wire were based upon a well known principle, although the application of this principle had never been made use of for the final product. The writer was familiar with this phenomenon at the time he entered the field of electricity; therefore, when it was disclosed to him that copper was not only one of the best conductors of electricity, but was the cheapest in conductivity, or per mile ohm, it was only left for him to determine whether or not this hardening process could be made available, in order that copper wire should be comparable to iron in its ability to stand the strain of its own weight when strung on poles, and, in addition thereto, the weight of sleet or snow and wind pressure. There was no mathematical road to determine this factor; therefore, it was simply a case of "cut and try."

First, the size of the finished product was fixed upon (No. 12 B. & S. gauge); then it became a matter of experiment to determine the size of the annealed copper rod which, when drawn to this predetermined size, should possess the proper tensile strength and the required torsional property. It was also necessary to determine the number of "holes" or reductions that should intervene in the process of drawing in order that the structure or fibre of the metal should not be injured during the process. Too much force would result in granulating the metal and thereby impairing its tensile strength. The experiments proved all that could be anticipated, and a sufficient amount of hard drawn copper wire was manufactured to equip the lines necessary to connect all of the mills, offices, and residences of officers of The Ansonia Brass and Copper Company, in whose wire mill these experiments were made. A telephone switchboard was set up in the brass mill of that company, and an operator answered calls

and made connections. This work was begun in November, 1877.

Although the product is known in the trade as hard drawn copper wire, and properly so known—as the name indicates its property of hardness and the method of manufacture—the name has no antonym or contra-term because soft drawn copper is a misnomer; the very process of drawing eliminates the quality of softness and makes it hard.

Prior to its introduction for aerial electrical conductors, there was very little, if any, call for the hard product. Copper wire was usually annealed after drawing, and sold in that form. Copper alloyed with other metals was, and is now, used in the manufacture of hard or "spring wire."

Skepticism on the part of electricians and generally in scientific circles, as to the practical value of this adaptation, prevented its being adopted to any extent, except the few circuits that the writer introduced into the Bridgeport, Conn., telephone exchange, until seven years afterward.

In 1884 the writer was commissioned to construct an experimental metallic circuit of copper between New York and Boston. The wire for this circuit was drawn under his personal supervision in the wire mill of the Bridgeport Brass Company. The total cost of this experiment was, in round numbers, \$70,000. After the experiment was concluded, the wires were turned over to the intervening telephone companies for local use, and immediate steps were taken to build the New York and Philadelphia long distance telephone line. The miles of hard drawn copper wire now in use for all electrical purposes are counted by millions.

The first recorded employment of copper as a line conductor was its use by Prof. Morse in his experimental telegraph line between Washington and Baltimore. The ordinary market wire was used but, for the reason that it would not sustain its own weight, it was abandoned and iron wire was substituted. The next of record was strung by the Western Union Telegraph Company, in New Jersey. In this case, also, the ordinary copper wire was used, but an attempt was made to increase its tensile strength by twisting a pair of wires into the form of a rope. This did not prove a success, and was abandoned for the same reason as the other. In the early seventies many experiments were tried in attempts to make available for aerial line conductors the superior conductivity of copper. In each case a steel wire was employed for tensile strength. In one case a copper ribbon was wound spirally around the steel wire. On exposure to the elements a chemical action was set up that quickly destroyed the steel core. This ribbon was afterward tinned, but with unsatisfactory result. In another experiment the copper ribbon was folded longitudinally. The last and most successful in this line of experiment was the process of electroplating the steel wire with copper. This was put in service by the American Rapid Telegraph Company, but in a few years it also proved unsatisfactory and was abandoned. Therefore it will be seen that the first successful employment of copper wire for electric line conduc-

tors was on the telephone lines of The Ansonia Brass and Copper Company in 1877, and the Bridgeport, Conn., telephone exchange in 1878. The next was on the line between New York and Boston in 1884. The latter experiment was an immediate success, and hard drawn copper wire was, within a few months, adopted throughout all civilized countries.

(To be continued.)

A Novel System of Wireless Telegraphy.

BY DR. ALFRED GRADENWITZ.

Our readers will doubtless remember the beautiful experiments in wireless telephony which were made by Herr F. Ruhmer on the Wannsee Lake, near Berlin, last year and continued with increasing success in the course of last summer. Now the inventor has applied his process to optical telegraphy.

In optical telegraphy the rays issuing from a projector are, as a rule, intercepted at given intervals, so as to form luminous flashes, succeeding one another more or less rapidly. In the Ruhmer telegraph system, on the contrary, the so-called speaking arcs are utilized by superposing on the direct current circuit of the lamp placed at the sending station in the focus of a projector, a continuous current frequently broken by means of a mechanical interrupter, the opening and closing being insured by a Morse key, in accordance with ordinary Morse signals. At each closing of the telegraph key, the superposed and frequently interrupted current will modify the luminous intensity emanating from the electric arc, giving rise to luminous oscillations which are projected toward the receiving station. If all the conditions be so arranged that the luminous intensity of the lamp is maintained constant, this process will insure not only a more rapid handling of telegrams, but will permit at the same time of keeping the latter strictly secret, as the human eye, incapable of discerning any more than ten luminous alternations per second, will get the impression of a continuous beam on account of the rapidity with which the luminous oscillations of the transmitting station will succeed each other.

The receiving station is arranged in a way analogous to those of optical telephony, comprising two telephones and one parabolic reflector in the focus of which the selenium cell is placed. The luminous oscillations of the transmitting station act on the selenium cell at the receiving station to alter the resistance of the electric circuit through the telephones, thereby producing intermittent humming sounds which vary with intervals corresponding to those of Morse signals. The pitch of this sound will depend on the frequency of the interrupter. Whereas in transmitting language, uncertainties are possible on account of the different acoustical intensities of the different vowels, the same sounds have to be

heard here for more or less prolonged intervals. It has therefore been possible to insure perfectly clear transmissions of signals in atmospheric conditions which would have rendered difficult the transmission of language. The beginning of a communication is indicated by a bell, operated by the selenium cell without the agency of any wire connecting it with the transmitting station.

The satisfactory results of the experiments so far made, go to show that this system of optical telegraphy, like the analogous system of optical telephony, will be used to special advantage in the case of transmissions over short distances.—Scientific American.

The North Magnetic Pole.

Major Glassford, in charge of the government cable office at Seattle, received a message a few days ago from Ronald Amundsen at Fort Egbert, Eagle City, Alaska, addressed to the Norwegian explorer, Nansen. The message is incomplete as to detail, but shows that Amundsen traveled from Greenland to Herschel Island, which indicates that he at last has located the Northwest Passage from the Atlantic to the Pacific for which Arctic explorers have been searching for centuries.

Amundsen left Norway in June, 1903. He made magnetic observations in various localities, and from the message it is taken that he set up his self-registering instruments last summer and located the true north magnetic pole on King Williams Island. He is said to have made a complete and systematic magnetic survey of the region about the magnetic pole, from which an accurate location of the pole is believed to have resulted. The determination of the north magnetic pole by Capt. James Clark Ross in June, 1831, rested on a single determination. Local disturbances may be expected in that region, and it was not believed that his determination was reliable. His position was on Boothia Felix, in north latitude 70 degrees, five minutes and 17 seconds, and west longitude 96 degrees, 45 minutes and 48 seconds. It has been generally believed that the magnetic pole is subject to a fluctuation in its position, and it is hoped that Amundsen's work will throw some light upon the rate and direction of motion.

If Amundsen has located the north magnetic pole, it will be of great value to science, especially if he succeeded, as he purposed, in determining whether the magnetic pole was a fixed point or a circumscribed area. If he found it was an area he proposed to make stations clear around it, so as to completely circle the magnetic pole.

Captain Amundsen left Herschel Island on October 24, and arrived overland at Fort Egbert, near Eagle City, Alaska, on December 5. His return trip will be made by the way of Behring Strait, and he proposes to stop at Sitka, and make his final observations there at the United States Coast and Geodetic Survey magnetic observatory for the determination of instrumental constants.

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NEW YORK, JANUARY 1, 1906.

The Book Department of *TELEGRAPH AGE*, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientele. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

Telegraph Age extends a Happy New Year to its readers everywhere, and wishes them all a full measure of happiness and prosperity.

The index for 1905 will be found bound in this issue; it can easily be removed, however, and bound in with the 1905 volume by those who are in the habit of binding their copies.

The report of the Fourth Assistant Postmaster-General, P. V. DeGraw, former telegrapher and newspaper man, shows in its compact, intelligible distinctness, and its strictly logical form, the training of its author. His subject was a big one, dealing with the post offices, the delivery service and the rural and suburban ramifications thereof, yet the story was told within the limits of a 16-page pamphlet, and in a manner that "he who

runs may read," all of which goes to emphasize the desirability of newspaper discipline. Mr. DeGraw should receive the printed, as he doubtless has the mental, thanks of newspapers from the Atlantic to the Pacific, for he has materially lessened their work.

Government Ownership of the Telegraph.

Mr. William R. Hearst, Congressman from New York City and whilom nominee for Mayor of the metropolis, is "at it" again, for he fathers a congressional bill "to enable the United States of America to acquire, maintain and operate electric telegraphs, and to pay therefor by sale of bonds redeemable out of the net earnings." It is provided that a commission consisting of five disinterested persons, two to be selected by the postmaster-general, two by the company interested, and one by the other four, shall appraise the value of any line or lines owned by a telegraph company, and, if the price be satisfactory, the President is authorized to purchase the line or lines. If a price satisfactory cannot be agreed on, it is provided that the properties shall be acquired by condemnation proceedings begun in United States circuit courts. The lines when acquired are to be operated under the direction of the Postoffice Department. The Secretary of the Treasury is authorized to borrow one hundred million dollars to purchase the telegraph lines. It is provided that a commission consisting of five members, not more than three of whom shall be of the same political party, shall be appointed by the President to aid in the acquisition of the lines.

Mr. Hearst made a phenomenal run for Mayor on the slogan of municipal ownership of public utilities, many persuading themselves to believe that in some occult manner his election meant the dawning of a millennium, in which the wage earner would receive immediately not only an increase of pay, but that the same would result from shorter hours of labor. Probably a convenient pigeon hole will receive and hold the bill, for it is not likely that the saving common sense of Congress will permit itself to be stampeded in favor of a move of this fantastic character, which must be regarded as an expression of but a fad pure and simple.

It is remarkable, however, to what an extent the vicious idea, embodied in such a proposition, in effect favoring a paternal form of government, is gaining in this country, clearly showing the trend of socialistic thought. Many newspapers, even, glibly declare for government ownership of the telegraph, when, if they would but take the trouble, as we have frequently pointed out, to look into and carefully study the problem involved therein, what it really means, they would doubtless see and recognize the hopeless fallacy of such a measure. Yet, parrot like, many continue the iteration with no adequate knowledge of the subject they are talking about.

It would, indeed, be a sad day for the business

interests of this country, which are not content to follow the slow-going methods prevailing abroad, and which, so far as the telegraph is concerned, are frequently quoted as fit examples for our adoption, should the telegraph pass over to government control. The old notion that the least governed people is the best governed people, as has hitherto prevailed, reflects a high state of national intelligence, and is a principle both in spirit and in operation that should not be departed from.

If the people of this country, however, imagine that corporations, telegraphic or otherwise, are not governed honestly, especially in view of recent unsavory disclosures made in insurance and other circles, the remedy therefor does not lie in their being taken over and run by the Government. Rather, the government should be appealed to only, to establish a system by which corporate affairs may be regulated and kept within proper bounds of conduct. Nothing more. The law may be made as stern and mandatory as necessary, but should not encroach on private management.

In our judgment the business of the postoffice could be far better conducted if it were run by private parties. Methods would be changed. It is altogether probable that greater efficiency would be established and that the yearly balance sheet would show a profit instead of a deficit as now. It's the "get there" principle that would be introduced that would bring about the result, necessarily maintained by the individual who achieves success.

Under government control of the telegraph, Mr. Hearst may put it down in very large letters that there would be no net revenue accruing from such management with which to pay off the one hundred million dollar loan as proposed. His views on the subject are chimerical, and we are inclined to believe that privately he thinks so, too.

Legal Intelligence.

The final step was taken December 6 in the suit brought by the State of Minnesota against the Western Union Telegraph Company to enforce the collection of taxes based on the valuation of the company's franchise, when a judgment was entered in favor of the State for \$19,464.80. The company refused to pay the taxes on a valuation of \$1,000,000, as fixed by the State Board of Equalization for the taxes of 1899, this being an increase of \$400,000, and the State brought a suit to enforce the collection on the increase, the company paying the taxes on the admitted valuation of \$600,000.

The main point at issue was whether the company could be assessed for its franchise or only for its tangible property, and the Supreme Court held that the franchise is subject to taxation.

The entry of the judgment in this case is for the amount of the taxes for 1899, costs and interest, but the importance of the decision lies in the precedent established, as under the decision of the

Supreme Court the franchise of all other public service corporations are also subject to taxation.

Prof. Morse the Inventor of Sound Reading.

Editor TELEGRAPH AGE:

In 1881 James D. Reid, of sacred telegraph memory, wishing to acknowledge a slight favor which he claimed to have received at my hands, presented me with a two-page document in the handwriting of Prof. Morse, dated at Poughkeepsie, N. Y., June 27, 1864. Thinking the younger generation of telegraphers may be interested in it, and as a matter of collateral history in the event of its not having been published heretofore, I send you herewith a copy.

D. H. BATES.

New York, December 20, 1905.

Following is the letter:

The reason for preserving this manuscript is to show evidence not merely that I had contemplated the practice now (1864) so common of reading my telegraphic characters by sound (which some assert is something new, and was not originally contemplated by me), but that this mode was distinctly stated in my earliest patents by Mr. F. O. J. Smith, in his own chirography. This manuscript was the revised copy of my American patent, and prepared by Mr. Smith for M. Perpigna, the French patent agent who prepared and procured my French patent. Many parts of this manuscript are in Mr. Smith's handwriting. The sheet marked "claim" in a French handwriting, is otherwise wholly in the handwriting of Mr. Smith, and it will be perceived that in the sixth and eighth claims the claim is distinctly to sounds as well as signs. It is, therefore, a little extraordinary that since Mr. Smith has sold out his patent interest in the telegraph, and come under obligations to the company to whom he sold not to be connected with a rival line, yet he has attempted to sustain a rival line (under the management of his own son, at least in part), on the plea that the use of sound in communicating my alphabetical characters, was new and did not infringe my patent.

This manuscript, therefore, prepared for my French patent in Paris in 1838, by Mr. Smith, shows that he could not possibly be ignorant himself that the telegraphing by sounds was a method then contemplated, and intended to be secured by patent.

(Signed) Samuel F. B. Morse.

Poughkeepsie, N. Y., June 27, 1864.

When it is understood that the day of the swift ocean liner and the telegraph, before The Associated Press and reporter were ever heard of, and when it is remembered that the battle of New Orleans less than a hundred years ago resulted in deplorable loss of life because the peace consummated two months previously was not known for the lack of news facilities which are now the world's commonplaces, the wonderful opportunities we now have of seeing, at it were, another great revolution, may be appreciated. The daily papers give us more accurate and reliable information than it was possible for those on the ground in Paris to know of the French Revolution near the end of the eighteenth century. Nor can the Russians know as much about what is occurring

in their own country as do the intelligent citizens of the United States. So long has a rigid censorship shackled the press in Russia that it has neither the means nor the demand for news.

The Ancestry of Edison.

The following item referring to the ancestors of Edison appeared not very long ago in the St. John (New Brunswick) "Globe:"

"The pedigree of Thomas A. Edison, the electrician, is largely Canadian. Among the New York loyalists who settled in and near Digby, Nova Scotia, at the close of the Revolutionary War were several of Dutch and some of German extraction. Among these was John Edison. His name appears first on the Digby records a few years later than those of Samuel and Moses Edison. It is believed, though there is no positive evidence, that Samuel and Moses were the sons of John. Samuel was the grandfather of the inventor. He, like many other Nova Scotians, was attracted by the fertile land of Upper Canada, and moved there about 1811. His son, Samuel, Jr., went to Ohio, and there the inventor was born."

In G. Washington Moon's "Men and Women of the Time" it is recorded, that Thomas Alva Edison was born at Milan, Erie County, Ohio, February 11, 1847, being of Dutch descent on his father's side and Scotch on his mother's side.

On referring to Judge A. W. Savary's "History of the County of Annapolis, Nova Scotia," which at that time embraced Digby, it is recorded that Elisha Jones with three brothers from Weston, Massachusetts, settled near Digby, at the same time with the Edison family. Cereno U. Jones, the son of Elisha Jones, was elected to represent Annapolis County in the Legislature in 1816, and in 1822 was appointed a justice of the peace, and in 1824 associate judge of the Court of Common Pleas. Judge Jones was the grandfather of F. W. Jones, of New York, and uncle of Lieutenant-Governor A. G. Jones, of Halifax, Nova Scotia.

Fighting for Patent.

"I happened to be chatting with Thomas A. Edison in his laboratory at Orange, N. J., one night while he was working on his most recent creation—the intensified dynamo," says a writer in Success Magazine, "and heard him discuss thoroughly the injustice that is done inventors in the United States. 'This very day,' he said, 'several of my well-known patents expire, and become the property of posterity, which means Tom, Dick and Harry. The government professes to protect the inventor for seventeen years, and after that time his creation is no longer his own. But, as a matter of fact, the government does no such thing. It lets any poacher run in and bring suit or apply for an injunction, disputing the inventor's patent already granted by the patent office, and in all the courts, pending the long-drawn-out litigation which follows, the other fellow is permitted to go on manufacturing and

selling the thing he claims to have invented before the real inventor made it.

"Do you see that little lamp there?" asked Mr. Edison, as he arose, full-length, in his ragged old linen duster of the workshop, and he pointed with his pencil to an ordinary incandescent electric light beaming brightly over a draftsman's table. 'It was my invention, known as a primary invention, because I took two things, a piece of metal and electricity, and made a third thing of them—light. Now I fought fourteen years in the courts for that little lamp, because a Frenchman bobbed up and claimed it after I had secured the patent. During all this litigation I had no protection whatever, and when I won my rights after fourteen years, there were but three years of the allotted seventeen left for my patent to live. It has now become the property of anybody and everybody. There is no protection given an inventor by the courts or the patent department.'"

What Did Luck Do for Them?

When we consider the few who owe fortune or position to accident or "luck," in comparison with the masses who have to fight every inch of the way to their own leaves, what are they, in reality, but the exceptions to the rule that character, merit—not fate, or "luck," or any other bogey of the imagination—control the destinies of men? The only luck that plays any great part in a man's life is that which inheres in a stout heart, a willing hand and an alert brain.

What has chance ever done in the world? Has it invented a telegraph or telephone? Has it laid an ocean cable? Has it built steamships or established universities, asylums or hospitals? Has it tunneled mountains, built bridges or brought miracles out of the soil? What did "luck" have to do with making the career of Washington, of Lincoln, of Daniel Webster, of Henry Clay, of Grant or of Garfield? Did it help Edison or Marconi with their inventions? Did it have anything to do with the making of the fortunes of our great merchant princes?

I have never known a man to amount to much until he cut out of his vocabulary such words as "good luck" and "bad luck" and from his life maxims all the "I can't" words and the "I can't" philosophy. There is no word in the English language more misused and abused than "luck." More people have excused themselves for poor work and mean, stingy, poverty-stricken careers by saying "luck was against them" than by any other excuse.

The door ahead of you, young man, is probably closed because you have closed it—closed it by lack of training, by lack of ambition, energy and push. While perhaps you have been waiting for "luck" to open it a pluckier, grittier fellow has stepped in ahead of you and opened it himself.—Orison Swett Marden in Success Magazine.

No up-to-date telegrapher can afford to be without TELEGRAPH AGE. It furnishes him with information essential to his welfare. Send for a sample copy.

Changes in the Telegraph Service.

In presenting another chapter to the story which has run through several issues, the purpose of which has been to chronicle some of the changes affecting only those individuals whose portraits appeared in "Telegraphers of To-Day," published by Mr. Taltavall, of TELEGRAPH AGE, in 1894, it is observed in the Postal Telegraph-Cable Company's service that Charles E. Bagley, who at the date named was assistant manager of the office at Boston, of which city he is a native, is now manager at Philadelphia, where he is establishing a fine record. John Annand, a Canadian by birth, who a decade ago was night chief operator at Portland, Ore., has since been advanced to the managership of the office, a position he now holds; Thomas F. Rochford, who in 1894 was manager of the entire Brooklyn (N. Y.) district, retired from the service in June, 1905, in order to devote his entire time to his real estate interests, which are large and which have yielded him a competency.

In that portion of the book devoted to the old timers of the telegraph and to the railroad telegraph superintendents, a number of changes are to be recorded. Charles F. Annett, who belongs to the great contingent of Canadian telegraphers in this country, who are numbered among the best, and who, when *Telegraphers of To-Day* was issued, was assistant superintendent of telegraph of the Illinois Central Railroad, is now manager of the Western Union Telegraph Company, at New Haven, Conn. Ralph D. Blumenfeld, a former telegrapher, at one time a valued contributor to TELEGRAPH AGE and in 1894 superintendent in New York of the *Herald* property, is now the brilliant editor of the daily "Express," London, England. A bright light in the telegraph firmament is S. M. English, who during the last ten years has risen from the position of chief operator of the Postal Telegraph-Cable Company at New Orleans, to be the general manager of the Postal Telegraph-Cable Company of Texas, with headquarters at Dallas. Then there is James Kent, now the general manager of the telegraph system of the Canadian Pacific Railway. From the position of a district superintendent, which he had gained in 1890, he was further promoted about five years ago to succeed Charles R. Hosmer, who then retired from the general managership. W. J. Camp, now a man of fifty, looked upon as one of the most capable electricians of the Dominion, who ten years ago held the post of electrician of the Canadian Pacific telegraphs at Montreal, has since been elevated to be the electrical engineer of the entire system. A. B. Smith, another of the galaxy of Canada's able telegraphers, who was superintendent of construction of the Great North Western Telegraph Company, at Toronto, has recently been made manager of telegraphs of the Grand Trunk Pacific Railway telegraph system, an appointment which removes his headquarters to Montreal. Harvey P. Dwight, long a prominent figure in Canadian

telegraphy, still holds his aforetime position of president of the Great North Western Telegraph Company, at Toronto, although he has surrendered the general management to younger hands, in the person of Isaac McMichael. Mr. Dwight is in his seventy-eighth year.

As with the land lines, so, too, have numerous changes occurred in the personnel associated with the submarine cable service, one of the most prominent is that affecting George Clapperton of the Commercial Cable Company, a man now in his fifty-second year and one of the best informed of the staff. His advance has been from the superintendency of the company to that of traffic manager. Another promotion in this company in that of Samuel S. Dickenson, who from the office of superintendent of the Canso, Nova Scotia, cable station, has become general superintendent with headquarters in New York. Frederick Ward, a younger brother of George Gray Ward, vice-president and general manager of the Commercial Cable Company, who ten years ago was superintendent of the company's cable station at Weston-Super-Mare, England, has since been promoted to the managership of the company's European interests, with headquarters at London. Other changes in the Commercial Cable Company affect Frank Wilson, who was superintendent at Boston, now retired on account of ill health, and the elevation of Charles E. Merritt of the New York office, from the position of cashier to that of assistant treasurer. Oscar Moll, who was traffic manager of the Direct United States Cable Company at London, England, ten years ago, is now general manager of the German-American cable interests, with headquarters at Cologne, Germany. Another promotion in the cable service at New York is that of Stephen F. Austin of the French Cable Company, who from the position of superintendent and representative has been made assistant superintendent of the Commercial Company.

Among the deaths which have occurred in the cable service are those of Gen. E. B. Fowler, auditor of the Commercial Cable Company, New York, who as Colonel of the 14th New York regiment, known for its fighting proclivities as the "Red Legged Devils," had an excellent Civil War record, and who died January 16, 1896; Thomas J. Wilmot, superintendent of the Commercial Cable Company's station at Waterville, Ireland, died April 12, 1904; Sir John Pender, G. C. M. G., M. P., of London, besides being a prominent political figure in England, was also at the head of vast cable interests, died July 7, 1896; James Brown, superintendent of the Direct United States Cable Company, at New York, died on December 17, 1897; his successor Arthur C. Frost, who previous to Mr. Brown's death, was manager of the New York office, is also numbered among the dead, his demise occurring April 23, 1905. Captain Samuel Trott who ten years ago was commander of the cable steamer "Minia" belonging to the Anglo-American Company and stationed at Boston,

Mass., died March 11, 1899. Captain Trott had the reputation of knowing the bottom of the Atlantic Ocean as well as a person would know the streets of the city in which he lived. James G. Smith, a well-known old timer at the time of his death, March 13, 1900, was identified with the cable department of the Western Union Telegraph Company.

Among other deaths in the telegraph service are the following: R. J. Hutchinson, superintendent of telegraph of the New York Stock Exchange, died November 24, 1899; Charles C. Hine, a forty-niner of the telegraph, who for many years previous to his death was editor of the "Insurance Monitor," New York, died April 17, 1897; Charles Peterson, a native of Denmark, superintendent of telegraph of the Delaware & Hudson Canal Company, has also gone over to the great majority; James D. Reid, who was affectionately known as the "Father of the Telegraph," and who was the first superintendent of telegraph in the world, having been appointed to fill that position in 1845, died in New York, April 28, 1901; W. W. Smith, an old time telegrapher, for many years previous to his death, general manager of the telephone company at Kansas City, Mo., died December 27, 1894; Day K. Smith, in 1894 president of the Duluth Transfer Railway Company at Duluth, Minn., formerly a Western Union Telegraph Company superintendent, and at one time president of the Old Time Telegraphers' and Historical Association, died September 14, 1894; F. W. Sabold, an old time telegrapher, ten years ago general manager of the telephone company at Yonkers, N. Y., died April 16, 1904; John I. Sabin, an old time telegrapher, who a decade ago was recorded in the pages of Telegraphers of To-Day as the head of the Bell Telephone interests on the Pacific Coast, died October 10, 1905; J. C. Van Duzer, a forty-niner of the telegraph, one of the most prominent military telegraphers during the Civil War, died at Escanaba, Mich., March 3, 1898; H. A. Bogardue, an old time telegrapher and a member of the United States Military Telegraph Corps, familiarly known all over the country as "Bogy," died March 26, 1904; John N. Gamewell, another forty-niner of the telegraph, inventor of the Gamewell Fire Alarm system, and who ten years ago was president of the Gamewell Fire Alarm Telegraph Company, New York, died July 19, 1896; G. L. Beetle, a forty-niner of the telegraph, ten years ago identified with the Western Electric Company at Chicago, Ill., is also numbered among the dead; A. H. Bauer, an old time telegrapher, one of those at Philadelphia who in 1864 was arrested and confined in the Old Capitol prison at Washington for supposed complicity with the famous bogus proclamation of President Lincoln, and who in 1894 was the electrician for the Pullman Palace Car Company, died January 14, 1895; Wayne H. Parsons, manager of the Postal Tele-

graph-Cable Company at Watertown, N. Y., a member of the United States Military Telegraph Corps and at one time private operator to General Grant, died September 3, 1898; Edward Leloup, manager of the New Orleans, La., office of the Postal Telegraph-Cable Company, who served the Confederacy as a military telegrapher during the Civil War, died February 2, 1900. He was succeeded by W. A. Porteous, now superintendent. E. R. Adams, in 1894 superintendent of telegraph of the Philadelphia and Reading Railroad and of the Philadelphia, Reading and Pottsville Telegraph Company, is also dead; Jesse H. Bunnell, of New York, senior member of the firm of J. H. Bunnell and Company, the well-known manufacturers of telegraph instruments, and who served as a military telegrapher throughout the Civil War, died February 8, 1899; Edwin C. Bush, a forty-niner of the telegraph, who when Telegraphers of To-Day was printed, was an official in the Cincinnati, Ohio, postoffice, died November 4, 1896; Robert Cunningham, proprietor of the Financial News Bureau, New York, another old time and military telegrapher, died April 8, 1897; A. B. Cornell, at one time governor of the State of New York, a forty-niner of the telegraph, one of the founders of the Western Union Telegraph Company in which he was a large shareholder and director, died October 15, 1904; James R. Dennis, an old time telegrapher and at one time superintendent of the metropolitan district of the Bankers' and Merchants' Telegraph Company, died June 2, 1898; Samuel J. Gifford, another forty-niner of the telegraph, in 1904 a successful business man of Dunkirk, N. Y., died August 18, 1901; Ezra T. Gilliland, a well-known telegrapher, a manufacturer, inventor and a capitalist, died May 15, 1903; James H. Guild, a native of old Williamsburg, Brooklyn, whose telegraphic career began in "Snow's" telegraph office, Detroit, Mich., in 1850, died June 20, 1898; R. B. Gemmell, superintendent of telegraph of the Atchison, Topeka and Sante Fe Railroad Company, who had direct charge, by wire, of the special train which conveyed Mr. Lincoln, President-elect, from Harrisburg to Philadelphia on the night of February 22, 1861, when on his way to Washington, died September 15, 1896.

(To be continued.)

The annual report of the United States Department of Commerce and Labor recommends that the Bureau of the Census be given authority to take up, among other subjects, that of: A five-year report on the electrical services, street railways, public power stations, telephones and telegraphs, etc., in lieu of the ten-year reports now authorized.

If you are not familiar with TELEGRAPH AGE, a postal card request will bring a sample copy to your address.

John S. Calvert at Atlanta.

The career of John Strother Calvert, until recently assistant superintendent of the Western Union Telegraph Company at Richmond, Va., affords another instance of the rapid advancement of a bright member of the younger element in the



JOHN S. CALVERT.

Recently appointed Assistant Superintendent, Western Union Telegraph Company, Atlanta, Ga.

telegraph service. Mr. Calvert has been a student; he is well grounded in the science and in the business of the company which he serves. His first position of responsibility in the telegraph was accepted in the summer of 1891, when he became the manager at Newmarket, Va., of the Rosenberger and Shirley telegraph line, a one-hundred and fifty mile affair, with fifteen offices, located in the Valley of Virginia. In the year following he took charge of the Western Union offices, first at Newmarket and afterwards at Natural Bridge Hotel, in November being appointed clerk in the office of Superintendent J. B. Tree, at Richmond. His next appointment was in 1895, when he was made auditor and error clerk under Mr. Tree. In 1897 another promotion awaited him, this time lifting him to the position of traveling auditor of the first district of the Southern division. In 1902 he was promoted to be inspector of offices and accounts of the territory comprised within both the first and second districts of the Southern division. It was on January 1, 1903, that he received his appointment of assistant superintendent at Richmond, from which, on December 1 last, as has already been published, his transfer to Atlanta, Ga., the main Southern headquarters, as assistant superintendent, was effected.

Preserve Your Papers.

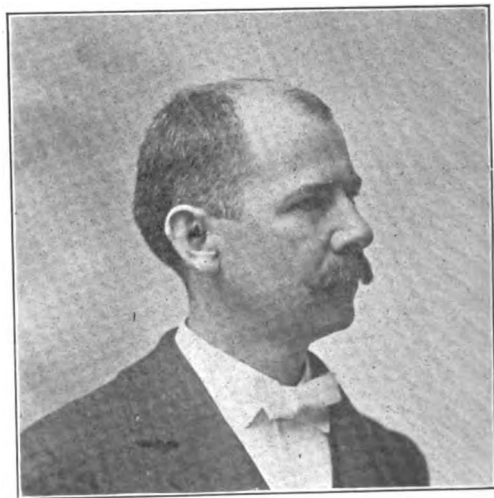
By taking a little trouble, when TELEGRAPH AGE first comes to hand, it may be preserved to form a permanent and valuable addition to the reading matter of a kind which all telegraphers should be supplied. We furnish

a neat and attractive cloth board binder, which will be sent by mail, prepaid, for \$1.00. It has good, strong covers, on which the name TELEGRAPH AGE is stamped in gold, and means by which each issue may be securely held as in a bound book. One binder may thus be made serviceable for a number of years, and when successive volumes, as they are completed, are bound in permanent form, the subscriber ultimately finds himself, for a moderate cost, in possession of a most valuable addition to his library, embracing a wide variety of telegraph, electrical and general information, and timely and original illustrations. Save your papers.

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of TELEGRAPH AGE, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

The New Western Union Manager at Worcester.

Peter Cunningham, the newly appointed manager of the Western Union Telegraph Company at Worcester, Mass., mention of which appeared in our December 16 issue, was born in that city April 7, 1857. He first entered the office in which he has since remained all his life, as messenger at the age of twelve years. Since that time he has steadily worked his way upward, holding in turn the several positions of delivery clerk, operator and chief operator, filling the latter position for the last twenty-five years. He is thoroughly familiar with the workings of the Worcester office and of the needs of the community in which he dwells. During the thirty-six consecutive years in which he has been an employee of the company, he has seen the Worcester office grow from one having a five-wire connection to that of over a hundred. The promotion of Mr. Cunningham was well deserved, as he has always been a faithful and loyal employee of the com-



PETER CUNNINGHAM.

The new Western Union Manager at Worcester, Mass.

pany, a thoroughly practical man of keen observation, his appointment was received with general satisfaction by the business men of Worcester. He is a prominent member of the Worcester Lodge of Elks, and charter member of Court Quinsigamond, F. of A. and I. O. Heptasophs.

John Gavey on the Telegraph, Telephone, Etc.

(Continued from issue of December 16, 1905.)

[John Gavey, of London, England, the eminent engineer-in-chief of the British telegraphs, was born on the Island of Jersey, August 11, 1842. He entered the telegraph service as an operator in 1860. His promotion in the service was steady, and he reached his present



JOHN GAVEY, OF LONDON.
Engineer-in-Chief of the British Telegraphs.

office in 1902. Mr. Gavey has been closely associated with most of the important developments of the telegraph and telephone service of the British post office. He is a man of extensive acquirements in the field of electrical engineering, and is regarded as an authority in matters telegraphic, foreign as well as in his own country.—Ed.]

Mr. John Gavey, engineer-in-chief of the British telegraph system, and who was recently elected president of the Institute of Electrical Engineers of England, delivered an inaugural address which has been published extensively by the technical press all over the world, it being regarded as a document of unusual importance, treating as it does in such a thorough manner all phases of the electrical industry and its developments. What he had to say in regard to the telegraph, the publication of which was commenced in our December 16 issue, is followed by his reference to overhead wires, underground and submarine cables. The chapter on wireless telegraphy will follow in a subsequent issue.

No marked changes have taken place in the methods of overhead construction, beyond the general tendency towards the wholesale substitution of hard-drawn copper for iron wire for overhead conductors. The magnetic inertia due to the metal itself which affects high speed results so largely when iron wires are used is, of course, absent in the case of copper. Although the first cost is higher, the scrap value of the copper when renewed is considerable, and there is the further point that when the time arrives for converting overhead telegraph circuits to telephone uses, the appropriated conductors will at once be available. In other respects there have been, of course,

various improvements in details which, however, do not need special mention.

In underground telegraphs, something approaching a revolution is in progress. It is a curious and instructive fact that the majority of the early inventors who designed or imagined methods of telegraphy contemplated the use of underground wires insulated by various ingenious methods which, however, would scarcely have proved efficacious in practice. Further, in this country, two of the great telegraph companies started with the idea of laying telegraphs underground, and very long lengths of gutta percha wire were laid in wooden casing, some of which is recovered from time to time and is even now found to be in excellent condition. Various reasons lead to the abandonment of underground work in favor of overhead lines, and little was done in later years in the direction of providing a comprehensive underground system until the great work in Germany was initiated in the seventies. Owing, however, to the high cost of gutta percha, and to its great specific inductive capacity, the extended use of this material did not commend itself to the English government, except, of course, in large towns where underground work was imperative, for, owing to the slow speed attainable on ordinary gutta percha underground wires, and the vast mass of press matter that had to be transmitted by the post office, there was little temptation to indulge in a heavy expenditure with the object of replacing overhead wires by underground work, even though the overhead wires were occasionally subject to serious interruptions which no human skill or engineering foresight could guard against. The introduction of the modern multiple cable insulated by dry paper and enclosed in lead sheath has gone a long way in the direction of overcoming both these difficulties—namely, the financial difficulty of cost and the electrical difficulty of high static capacity.

Incidentally, it may be of interest to refer to the genesis of the modern air-space dry-core cable, for details of which I am indebted to Mr. Kingsbury. It is, of course, well known that many attempts were made years ago to obtain a cheap substitute for gutta-percha insulated wires, and these attempts generally took the direction of wires covered with cotton or other fibrous material enclosed in a pipe or tube, which was filled with a permanent insulator, either solid or liquid, such as paraffin wax or oil. At a later period paper was substituted for cotton, and it was proved that wires so insulated had a lower static capacity than those covered with cotton. It was at first assumed that this was due to the character of the paper used, but it was soon realized that the actual reason was that with the paper the insulating compound could not be forced into the tube so as to absolutely fill all the interstices, and that numerous air spaces existed throughout its

length. From this to the use of the present form of cable was but a step. In cables of this type relatively large conductors weighing from 100 pounds to 200 pounds per mile can be provided with a static capacity of 0.1 microfarad per mile, and where a large number of wires have to be provided, at a total expenditure not very unduly in excess of that necessary for overhead wires.

As soon as this type of cable became available for use, the post office took the initial step in the construction of a line containing seventy-six wires enclosed in a three-inch iron pipe from London to Birmingham, a distance of 117 miles. This line was commenced in 1897, was completed in 1899, and brought into use after preliminary experiments had been carried out with a view of determining its adaptability for the purposes of the post office. It was, of course, foreseen that the wires in close proximity would be subject to a certain amount of mutual disturbance, and it was doubtful to what extent this disturbance would interfere with the various methods of telegraphy in use. To provide for the worst possible case, therefore, the wires were twisted up in pairs like those required for telephone circuits, and the length of the lay of the neighboring pairs was varied, so as to provide as far as possible for working metallic loops where necessary, either for telegraph or telephone purposes, with the minimum amount of mutual interference. The experiments proved that it was possible to work duplex on neighboring single wires of a pair, when earthed at each end, without interference when the speed was limited to that possible with manual transmission. Quadruplex working was subject to some slight interference, but under these conditions Wheatstone working was not possible at a higher speed than fifty to sixty words per minute. The general result, however, was admirable from every point of view, and the steadiness of working and the freedom from interference by atmospheric or other causes was so great that the postmaster-general subsequently decided to extend the London-Birmingham line to Glasgow. The question of the type of cable to be carried forward then came up for consideration. From London to Birmingham there were thirty-eight pairs of wires. In the interval many types of paper insulated cables had been devised with a view to obtain a form suitable for use with earthed circuits, and therefore to a great extent free from mutual induction, either static or electro-magnetic, the ultimate outcome of which was the design of a conductor insulated with paper, each insulated conductor lapped with copper foil and the whole of the wires cabled and sheathed with lead.

It was finally determined to continue the London-Birmingham section northward by the laying of a cable containing thirty-seven pairs of the ordinary paper insulated wires as a core surrounded by twenty-nine copper screened single-wire conductors; this decision being arrived at after it had been proved conclusively that where

quadruplex or high speed circuits were required, it was possible to obtain satisfactory working with the quadruplex or Wheatstone on a metallic loop, and to superimpose thereon a key duplex. Where a quadruplex is therefore in use on a long circuit, six channels are obtained on two wires, or a Wheatstone duplex and a key duplex can be worked on each loop. Again, it has been proved that between London and Glasgow, by the use of a repeater at Preston or Warrington, a speed of two hundred words per minute can be obtained on these wires with Wheatstone apparatus, so that it will be observed that a great step has been made by the substitution of a moderately economical system of underground work susceptible of working at high rates of speed, for the old costly and slow methods which the use of gutta-percha involved where land telegraphy was concerned. The main underground line from London to Glasgow will be completed by March or April, 1906, and other important sections of main line, notably a section from London to Chatham, are in hand.

(To be Continued.)

Amazon Telegraphs.

"The Valley of the Amazon and its Telegraphic Communication" is the title of a brochure written by Mr. Francisco Bhering, of the Brazilian telegraph administration, and also the delegate of Brazil at the London Telegraph Conference, says the "Electrical Review," of London. It is stated therein that, with the view of assuring regular communication, the following lines were provided: (1) A landline along the railway from Mederia to Momare. (2) A cable across the river from Belem to Manaos. (3) Landlines along the banks of the river, and serving as auxiliary lines to the British river route. (4) Landline from Caqueta to the mouth of the river Aquiry. (5) Wireless telegraph installation at various points along the Amazon and some of its chief affluents.

The first and fourth lines have completely failed. The river line of the Amazon Company has not, the brochure states, given the good results hoped for. The irregularity in working of the cable, which is frequently interrupted between Para and Manaos, considerably interferes with commerce. * * * Experience has also shown that it is not possible to keep the aerial line in good working order, by reason of floods and difficulties of maintenance.

The auxiliary routes constructed by the Amazon Company also did not prove successful. It has been decided to try the American system of wireless telegraphy, and the author thinks this cannot be taken, excepting as auxiliary to the existing systems. At the same time, Mr. Bhering states that he does not think it possible that communication can be maintained by cables, owing to the incessant changes in the depths of the river.

You can't afford to be without TELEGRAPH AGE.

Sons of United States Military Telegraphers.

In our issue of December 1 we printed an article over the signature of David Homer Bates, in which he advocated the organization of a society to be known as the "Sons of United States Military Telegraphers," the object being to perpetuate the memories and traditions of the United States Military Telegraph Corps. Since the publication of Mr. Bates's letter we have received a number of communications giving valuable information bearing on this subject. The letter from Col. Wm. B. Wilson, of Philadelphia, president of the Society of the United States Military Telegraph Corps, is interesting and important, and is as follows:

In regard to "Sons of United States Military Telegraphers." I am in entire sympathy with Mr. Bates's suggestion that such an organization be effected to perpetuate the memories and traditions of "The Society of the United States Military Telegraph Corps" and all that it means in the history of the Civil War. But this plan of promotion seems to me to be too roundabout to carry the suggestion to a reality at an early day. The executive committee of the society, of which the president is ex officio chairman, is scattered and could not be brought together to consider the question. The organizing should be left to the "Sons" who must take the initiative. There are "Sons" sufficient in New York City to perfect an organization if they so desire. They should get together at once, formulate their plan and communicate with the "Sons" throughout the country. John Brant, secretary of the Old Time Telegraphers' and Historical Association, has the addresses of all the known military telegraphers and would gladly furnish them. If there is any difficulty about getting the "Sons" in New York together I would willingly appoint a committee from among them to take the preliminary steps, as it is entirely within my province to do so. It is a great thing to organize the "Sons," and being so the sooner organization is effected the better.

The names which have thus far been presented as being eligible for membership in such an organization, are as follows: Charles P. Bruch and E. B. Bruch, of New York, sons of Samuel Bruch; David H. Bates, Jr., son of David Homer Bates, New York; Albert E. and Willis Chandler, sons of Col. A. B. Chandler, New York; Thomas T., Jr., and James C. Eckert, sons of Gen. T. T. Eckert, New York; Thomas Brenneman, of West Virginia, son of A. T. Brenneman; Mr. D. L. Ludwig, son of D. J. Ludwig, Brooklyn, N. Y.; Mr. Nichols, son of J. H. Nichols, Denver Col.; Mr. O'Brien, son of Richard O'Brien, and Mr. O'Brien, son of Dr. J. E. O'Brien, all of Scranton, Pa.; Mr. Rosewater and Edward Rosewater, Jr., sons of Edward Rosewater, of Omaha, Neb.; A. L. Tinker, of Berlin, Germany, son of Chas. A. Tinker, New York; Thomas Wallace Wilson, of Philadelphia, Donald Wilson, of Brooklyn, N. Y., and Francis S. Wilson, of Eldorado Springs, Mo., sons of Col. Wm. B. Wilson, Philadelphia; Mr. Somers, son of L. A. Somers, Cleveland; Frank J. Dealy and Harry J. Dealy, sons of W. J. Dealy, New York; Mr. Nohe, son of A. H. Nohe, Chicago; H. E. Pettit, son of J. E. Pettit, Chicago; Mr. Plum, son of W. R. Plum, Lombard, Ill.; Mr. Ludwig, son of J. F. Ludwig, Cedar Glade, Ariz.; S. B. McMichael, son of I.

McMichael, Toronto, Ont.; Mr. Knittle, son of Joseph Knittle, New York; Mr. Logue, son of W. S. Logue, New York.

New Western Union Chief Operator at Memphis.

James B. Dillon who has been appointed chief operator of the Western Union Telegraph Company, at Memphis, Tenn., as announced in our issue of December 1, was born at Louisville, Ky., February 1, 1871. He was fourteen years old when he entered the telegraph service as a Western Union messenger. Naturally of a thoughtful and studious nature, young Dillon began the study of telegraphy almost at once. In this he was aided by means of an experimental line he and a young fellow erected between their homes, half a mile apart, which worked well and over which they transmitted messages. The name of his friend was Oscar W. Krider, now a telegrapher and who has succeeded Mr. Dillon as traffic chief in the Louisville office. Young Dillon's first



JAMES B. DILLON.

Who has been appointed Chief Operator, Western Union Telegraph Company, at Memphis.

appointment as an operator was on the Kentucky and Indiana Bridge Company, a short line of railroad. Subsequently he became an operator for the Western Union at Paducah, Ky., afterwards going to Memphis, Tenn. At the latter point he remained until 1888, acquiring during that time a fine reputation as an operator. His next move was to Atlanta, where he received press reports for the "Constitution" of that city. In the spring of 1889 he returned to Louisville, where after several years he was appointed traffic chief, the position from which he has just retired to accept the appointment at Memphis.

Mr. Dillon is a close student, is of an inventive turn of mind and diagrams of a number of his devices as well as articles treating on various subjects have appeared in TELEGRAPH AGE from time to time. The chain and charm which appears in the picture of Mr. Dillon are those which were presented to him by his associates in the Louisville office at the time of his departure.

The Train Despatcher.

Mr. H. A. Dalby, a well-known Western train despatcher, has this to say in an article appearing in the "Iron Trail," respecting his craft:

"Who is he? What is he? Where is he? What does he do? Comparatively few people can answer these questions. Only a small number of those who can answer them have an accurate knowledge of his work. Even in railroad service there are many who know but little of the real questions that confront him, the difficulties with which he comes in contact, or the mental training necessary to the making of a good despatcher.

"The requirements of successful train despatching may be separated into two grand divisions; the man and his surroundings. Given a first class man with proper equipment, and good despatching is practically assured.

"Let us consider first the man. He should be old enough to be mature in his views and impressed with the importance of the position he holds. In the opinion of the writer his usefulness is not exhausted at the age of thirty-five nor at forty-five, unless he has been worn out by excessively nerve-trying conditions; and these, when imposed, are detrimental not only to the man, but, in far greater degree, to the service. Amid encouraging, and not discouraging, conditions we see no reason why a despatcher should not be a better and more useful man at fifty-five than at thirty-five. At thirty-five he has no more than acquired a fair experience in all the situations which may be expected to come, and which do come in endless variety in the line of daily duty. If he lived to be one hundred and five he would not be beyond learning something new. Such is the value of experience.

"The personal equipment of a successful despatcher comprises a varied knowledge and peculiar mental ability. He should know the road thoroughly and should have opportunity to keep in touch with it without loss of sleep, or pay, and without the necessity of extra work to make up for loss of time from the office occasioned thereby. To ride over the road should be considered a part of his duty. His judgment should be the best, that he may make such moves as will result in the greatest good to the greatest number of trains. His foresight should be as far-reaching as human nature will permit, so that he may anticipate future situations and make provision for them. His power of concentration should be cultivated so that he can keep his mind strictly on the business in hand and allow no outside influence to draw his attention to other things. He should have sufficient confidence in himself and his own ability, so that he will not be disturbed by criticism, and that he will not depreciate his own value when others find fault with his work. Criticism is to be expected, and should be accepted as a matter of course. Neither should he be so egotistical that he cannot entertain a suggestion from

others. The train despatcher's office is no place for one who is too sensitive or too self-opinionated. It is seldom that either trait leads to the higher success. Much depends on the man; but quite as much on his surroundings."

Mr. DeForest on the Wireless System.

Lee W. DeForest, inventor of the DeForest wireless telegraph system, says the "wireless transmission of power" is not a wild dream, but a scientific possibility. "The history of wireless electricity is but a repetition of the wire system," says DeForest. "First crude signals, then intelligence conveyed over the wires, next speech and lastly power. Years ago when the first crude telegraph signals were sent over the wires it was thought that a separate wire would be needed for every character of the alphabet. I am now experimenting in my laboratory at Jersey City with wireless telephony. My work is already attaining some form. As soon as the wireless telegraphy is a little more improved I expect to bring out a system of telephoning without wires which will come into general use. After that the transmission of power through the air without wires will come. It will follow just as surely as it did in wire electricity. I am working in that general direction now. I can in a sort of way see the end of the development."

His Code Was Faulty.

The telegraph operators were wisely spending their day off in a brisk walk through the faded autumnal country.

"You know our habit of abbreviating, our habit of substituting short words for long ones?" said the Washington operator. "Well, this habit once did me harm.

"Senator Grande had made a speech about education, and in wiring the speech out I substituted the short word 'kids,' which is not exactly according to the recognized code, for the long word 'children,' thinking that of course the operator at the other end would have sense enough, in taking down the message, to re-substitute the long word for the short one.

"But he didn't, and Senator Grande's really eloquent and stately speech appeared in the next day's newspapers in this fashion:

"My friends, you will remember Wordsworth's profound saying: 'The kid is father to the man.' I need not dwell on the vital importance to the community of imparting a sound moral and secular education to kids in their impressionable years. The kids of this generation will be the fathers and mothers of the next. One said 'Suffer little kids to come unto me,' and we should never forget that saying in behalf of all kids the world over."

TELEGRAPH AGE is the only telegraphic newspaper published in America. It is up to date, covering its field thoroughly, and no telegrapher, official or operator, can afford to be without it.

A Valuable Book on Testing.

We are in frequent receipt of letters from correspondents wishing to ascertain the names of a book that will give detailed information on testing by voltmeter, ammeter, etc. We are pleased to announce that a new book just placed on the market, entitled "Electrical Instruments and Testing," by N. H. Schneider, price \$1, covers the subject of testing thoroughly. It contains 110 pages and over 100 illustrations and tables. Because the book is low in price does not invalidate its claim to the best of its kind dealing with testing subjects, some of which are as follows:

The simple galvanometer; deflections not proportional to current; ampere turns; selection of size of wire for coil; tangents; the tangent galvanometer; influence of the earth on a galvanometer; the astatic galvanometer; compensating magnet.

Sensibility of galvanometer; figure of merit or constant; the Thompson reflecting galvanometer; forms of the D'Arsonval reflecting galvanometer; ballistic galvanometers.

Rheostats; resistance wires and their composition; laboratory resistance slab; shunts; condensers; keys; the reversing key; the Rymer-Jones key; commutator; the Kempe discharge key; the standard cell; Clark cell; Weston cell.

The voltmeter; the series ammeter; the shunt ammeter; types of instruments; sensibility; duplex instruments; potential indicators; millivolt and milliampere; multipliers; hot wire instruments; shunts; the wattmeter; Thomson inclined coil instrument; Queen instruments; Keystone instruments; G. E. potential indicator; electrostatic voltmeters; electro dynamometer type; electromagnetic type; reading instruments; parallax; care of instruments.

The Wheatstone bridge; post office bridge; how to use the bridge.

Forms of portable sets and how to use them; Queen bridge; Willyoung bridge; Whitney bridge; Sage ohmmeter; Evershed testing set.

Current flow and e. m. f.; galvanometer constant; direct deflection method; with Queen set; with voltmeter; testing resistance of galvanometer; five methods of battery testing.

The potentiometer; checking voltmeter; checking e. m. f.; use of various portable testing sets.

Charge and discharge of condenser; testing capacity and insulation of condenser; loss of charge method.

Cable testing; capacity; insulation and conductivity; locating cable faults; Varley test; Murray test.

Testing with voltmeter; testing wiring; insulation of generator; e. m. f. around commutator; measuring drop; testing high e. m. f. with low reading voltmeter; temperature and resistance; testing temperature by rise of resistance; testing filed coils; testing armature coils; plotting curves of tests.

Address all orders accompanied by the cash, to J. B. Taltavall, 253 Broadway, New York.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

PHILADELPHIA, WESTERN UNION.

Miss Risley, who came to us recently from Virginia, was quietly married several weeks ago to Mr. Claude Figgs, of this office. Notwithstanding the quietness, it soon leaked out, and congratulations and good wishes followed. Mr. and Mrs. Figgs will continue to be co-laborers with us.

Another surprise wedding which took place about a month ago was that of Miss Anna Gibbs to Mr. Harry Haynes, both well known here, but now located at Trenton, N. J.

Richard Murphy, who rose from the ranks of check boy to be a good operator, has resigned to accept a broker position.

Messrs. Hughes, Cartin, Stanley and Lewis were sent out to different branches to assist during the Christmas rush.

Messrs. Simons and Abdill, who were both on the sick list, have returned to duty.

Mrs. Curl has been made manager of the new branch office at 12th and Filbert streets, vice Miss O'Donnell, resigned to go with the Postal company at Bellevue-Stratford Hotel.

NEW YORK.

WESTERN UNION TELEGRAPH COMPANY EXECUTIVE OFFICES.

Mr. John C. Barclay, assistant general manager and electrical engineer of the company, has recently completed a tour of inspection, which included visits to the offices at Albany, Buffalo, Cleveland, Columbus, Indianapolis, Cincinnati and Pittsburgh, traveling in the private car of the company. Joining him and remaining during the time occupied in passing over their respective jurisdictions, at the outset were Belvidere Brooks, general superintendent of the Eastern division; E. M. Mulford, superintendent of the first district; C. H. Bristol, general superintendent, and G. F. Swortfeger, superintendent of construction, all of New York; C. Corbett, superintendent at Cleveland; T. P. Cook, general superintendent at Chicago; J. F. Wallick, superintendent, and C. S. Rhoads, superintendent of telegraph of the Big Four, at Indianapolis; I. N. Miller, superintendent at Cincinnati; E. B. Saylor, superintendent, and G. A. Cellar, superin-

tendent of the Pennsylvania lines west of Pittsburgh, at Pittsburgh, Pa., and Charles Selden, superintendent of telegraphs of the Baltimore & Ohio Railroad.

The new main office at Baltimore, Md., which is now being rapidly pushed to completion, will be ready for occupancy on March 1. This will be another one of the up-to-date modern offices.

Mr. Charles F. Swortfiger, of the office of the superintendent of construction, spent holiday week with relations in Chicago.

IN THE OPERATING DEPARTMENT.

Among the recent visitors to this department were: Superintendent F. E. Clary, of Hartford, Conn., and N. E. Smith, superintendent of telegraph of the New York, New Haven & Hartford Railroad, New Haven, Conn.

Mr. W. A. Van Orden, general wire chief, has resumed duty after a brief illness.

Mr. Charles A. Kilfoyle, secretary of the New York Telegraphers' Aid Society, also a member of the operating force, states that over four hundred dollars will be realized from the recent entertainment held for the benefit of the relief fund of the aid society.

Mr. A. Winder, one of the best known operators in this department, and formerly for many years chief operator in the Indianapolis, Ind., office, has become an efficient sender on the Vibroplex, by means of which his old time ability as an operator has been restored. Mr. Winder is seventy-one years of age, and suffered much from writer's cramp until this device gave him the needed relief. He also uses the typewriter, which makes him a first-class receiver. He bids fair to enjoy many more years of usefulness.

OTHER NEW YORK ITEMS.

Assessment No. 443 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of Henry C. Bolles at New Bedford, Mass.; George E. Rainisford at Mount Savage, Md.; Jonathan James at Milwaukee, Wis., and Albert Beman at Independence, Ia.

The election for the officers and directors of the Serial Building Loan and Savings Institution will occur January 16. The nominations are as follows: President, David B. Mitchell; vice-president, James R. Beard; treasurer, Edward S. Butterfield; secretary, Edwin F. Howell; attorneys, John B. Sabine, Augustus A. Rich; directors, J. B. Taltavall, M. J. O'Leary, G. H. Schnitgen, H. C. F. Howell, John Brant, F. C. Leubuscher, M. W. Rayens, H. F. Hawkins, W. H. Jackson, G. W. Blanchard, M. S. Cohen, C. F. Leonard, T. A. Brooks, W. J. Quinn and J. P. Clolery.

Nominations for the Electric Building Loan and Savings Association presents the same ticket for the executive officers as those named for the Serial. The directors are: J. B. Taltavall, M. J. O'Leary, John Doran, G. H. Schnitgen, H. C. F. Howell, John Brant, W. J. McNickle, F. C. Leubuscher, Henry Zweifel, M. W. Rayens, H. F.

Hawkins, W. H. Jackson, G. W. Blanchard, M. S. Cohen and P. O. Purcell.

The auditors are: M. M. Davis, W. H. Davis and James P. Cullen.

THE NEW YORK TELEGRAPHERS' AID SOCIETY.

Statement for quarter ending December 6:

Balance on hand September 6, 1905....	\$18,147.67
Receipts	1,585.00

Total	\$19,732.67
-------------	-------------

Disbursements.

Sick benefits.....	\$1,091.36
Deaths	200.00
Expenses	195.20
Balance on hand, December 6, 1905	1,486.56
	18,246.11

Total	\$19,732.67
Gain in quarter	98.44

Relief Fund.

Balance on hand September 6, 1905..	\$4,243.74
Receipts	361.35

Total	\$4,605.09
Disbursements, relief.....	224.70
Balance on hand December 6, 1905....	4,380.39

Total	\$4,605.09
Total amount of deposit.....	\$22,582.40
Cash on hand.....	44.10

J. H. Driscoll, F. D. Murphy, W. T. Rogers, auditors.

POSTAL TELEGRAPH CABLE COMPANY.

EXECUTIVE OFFICES.

Mr. Minor M. Davis, traffic manager, has returned to his office from an extended Southern business trip.

Mr. John F. Skirrow, associate electrical engineer, is reported to be improving. He has made several visits to the office recently.

IN THE OPERATING DEPARTMENT.

The check boys and girls were remembered by the force on Christmas and all went home happy.

B. A. Scanlon has returned from a three months' trip spent at his home in Newfoundland.

Among the arrivals are: H. N. Wiley, W. I. Schultz, W. F. Gainfort, W. S. Frankenfield, J. O. Curtis, J. E. Reeve, G. M. Strache, S. E. Rottman, J. J. Montall, Miss J. Menting, Miss A. Hartley, W. Winthrop and W. Yoell.

Mr. C. A. Adams of the eastern division is at his desk again after an absence of six weeks due to sickness.

H. C. Robinson has been sick for the past four weeks with appendicitis.

G. Dettviller is now located with Logan and Byron, brokers.

R. Woodford has been added as a clerk in the service department.

Mr. C. W. Ortt is now on the leased wire board nights.

The Hammond Typewriter.

The Hammond typewriter has steadily fought its way to extended recognition among the telegraph operators as a machine admirably adapted for telegraphic work. The essentials of a telegrapher's typewriter are good manifolding, little noise, perfect alignment, durability and speed. In all of these important phases many an operator will bear willing and generous testimony to the Hammond's worth. It has two keyboards, one, the "Universal," for those who have used other makes of machines and do not care to learn a new style; the other, "Ideal," so-called for those who desire to acquire a higher speed in manipulating the instrument. A feature much in favor with the Hammond, which must be regarded as a measure of great convenience, and certainly as an aid to speedy work, is that from twelve to fifteen blanks may be placed in the carriage at one time. When a message is completed, and the blank is at the top of the carriage, the operator has simply to touch a lever, draw out the message, and the other blanks readily fall back into place ready for instant use. Another admirable point is that the carriage will admit of any width of paper, making it possible to insert a continuous roll for use in press messages and specials. The work being always in view, the operator never loses sight of his copy, and thus may the more quickly detect any errors in checks before withdrawing the message from the machine.

The Hammond Company, whose address, as will be seen in their advertisement on another page, is at 537-551 East Sixty-ninth street, New York, issue an eight-page leaflet entitled "Why Telegraph Operators Should Use the Hammond Typewriter," and this, together with other desirable printed matter, will be sent to any operator writing for the same. The general manager of the company states that sales have been larger than ever this year, more Hammond typewriters going distinctively to telegraph operators than in any previous season.

Novel Service of the Messenger Boy.

Nowhere in the world, say travelers, do messenger boys take the risks and do the unheard of things they do in Los Angeles, Cal.

The stranger stops and stares in amazement to see a messenger boy awheel, hands off the handle bar, and a huge tray bearing somebody's breakfast or lunch nicely balanced on his head. Sometimes there are two boys, one on the shoulders of the other and the tray atop the human pyramid.

As many tourists live in the downtown districts and often send out for their meals, the messenger boy has become an adept in carrying trays through the crowded streets.

Occasionally the tray comes to grief and somebody's breakfast or lunch mixes with the dirt of the street to the amusement of passers-by and, the chagrin of the messenger. This is the exception. The rule is that tray and meal arrive safely at their destination.

Forgot What Electricity Was.

A Denver newspaper devotes a large space in an unavailing effort to answer a correspondent's question, "Does anybody know what electricity is?" As somebody has observed, that reminds us of a story.

"There is now in Prineville, Ore., a lawyer who, some years ago, was a college student back East. One day in the class-room the subject of discussion was electricity. The student had read all he could find in his text-book about electricity, and considered himself primed for the occasion. The professor opened the ball with this direct question, flashed peremptorily at this particular student:

"Mr. Blank, can you tell me what electricity is?"

Mr. Blank squirmed in his seat, hemmed and hawed for a time, and finally admitted:

"I did know, professor, but I have forgotten."

The professor gazed at the student with an expression of unspeakable sorrow. Then he said:

"Mr. Blank, you do not know what you have done. Alas! what a sad loss to science! You are the only man that ever lived who has known what electricity is—and you have forgotten."—Portland Oregonian.

Great North-Western Improvements.

(Communicated.)

The recent extensions of the lines of the Great North-Western Telegraph Company and the increase in its wire facilities to accommodate the constantly increasing business of the company, has been the subject of more or less public comment.

The Great North-Western Telegraph Company was formed in 1881, taking over at that time the lines of both the Montreal Telegraph Company and the Dominion Telegraph Company, which it still operates. Since that time an exclusive connection with the Western Union Telegraph Company has been formed and the company's lines so extended that they now reach every important city in Canada and a majority of the larger towns. Its lines even extend down into the State of New York, where a large number of offices are maintained. The company now operates 1,409 offices in addition to the city branches, and of that number 1,080 are exclusively Great North-Western offices. In four of the larger cities, the company owns its own building, in which the main office is located. In connection with the Western Union, direct wires are operated to the principal American cities, as well as to three cable stations and between the larger Canadian cities. In a dozen or more cities a modern call-box system is in use for the collection of telegrams. On account of the large number of exclusive offices and branches in all the leading hotels, the commercial traveler or American tourist will always find an office of the Great North-Western close at hand, from which communication can be had with 49,380 places in Canada, the United States and Mexico.

The Vibroplex

In order to afford buyers of the Vibroplex, the most perfect telegraphic transmitter extant, an opportunity to deal conveniently with their nearest home agent, the following authorized representatives are named for their special benefit:

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New York.—G. H. Wiser, Postal Tel. Co.
Philadelphia, Pa.—D. Good, W. Union Tel. Co.
Pittsburg, Pa.—F. J. McKenna, W. Union Tel. Co.

Hudson's Word Register.

Buyers of Hudson's Word Register, the standard and most simple and accurate device for counting the words written upon the typewriter, will consult their convenience by communicating with any of the following named authorized agents, preferably the one nearest to their place of residence:

Kansas City, Mo.—J. N. Harper, West. Union Tel. Co.
Philadelphia, Pa.—Daniel Good, West. Union Tel. Co.
Pittsburg, Pa.—F. J. McKenna, West. Union Tel. Co.

Obituary.

James Sullivan, aged twenty-nine years, a telegrapher well known in western New York, died at Stockton, N. Y., December 13.

H. W. Perrin, aged fifty-six years, an old time operator, lately in the insurance business at Birmingham, Ala., died December 14.

Gentry Hagen, aged sixty years, a well-known telegraph operator at Baltimore, Md., died of acute rheumatism in that city on December 3.

Capt. W. R. Cato, who for the past thirty-five years has commanded many cable steamers including the "Great Eastern," died at London, England, on November 26.

George F. Marsh, fifty-six years of age, a native of Vermont, one of the best known citizens of Butte, Mont., and a well-known telegrapher, died at that place after a lingering illness on December 8.

George W. Griswold, aged sixty-eight years, a veteran telegrapher of Hamilton, Ohio, died of apoplexy December 17. He had been employed in the telegraph service at that point for forty-seven years.

J. D. Flynn, of Pittsburg, Pa., an old time telegrapher and a member of the United States Military Telegraph Corps, died of pneumonia on December 25, after a brief illness. Mr. Flynn had been in New York but three days previous to his death where he contracted a cold which proved fatal. Up to three years ago and for the previous ten years Mr. Flynn was superintendent of the Western Union Telegraph Company at Pittsburg, Pa. He was born at Cleveland, Ohio, December 25, 1846, and consequently died on his fifty-ninth birthday. He entered the telegraph service on the Grand Trunk Railway lines in Canada in 1859. In 1862 he identified himself with the United States Military Telegraph Corps and was located at Harpers Ferry, West Va. For

many years he was in the Baltimore and Ohio service and was advanced to the position of assistant superintendent when he resigned to become superintendent of the Bankers' and Merchants' Telegraph Company at Chicago in 1884. In 1891 after acting as chief operator in a brokerage concern in New York for the previous five years, he accepted the management of the Western Union office at Pittsburg where on the death of Charles O. Rowe, two years later he succeeded to the superintendency.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

[Advertising will be accepted to appear in this column at the rate of three cents a word, estimating nine words to the line.]

Rubber Telegraph Key Knobs.

Price fifteen cents, reduced from twenty-five cents. No operator who has to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. This renders the touch smooth and the manipulation of the key much easier. Remit in one or two-cent stamps and address.

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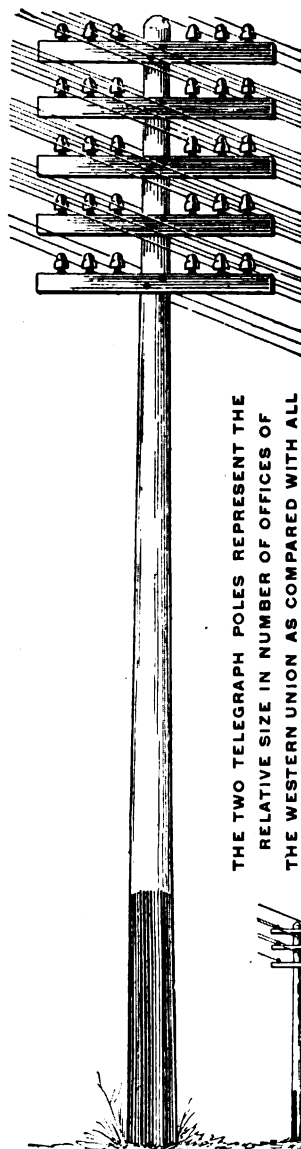
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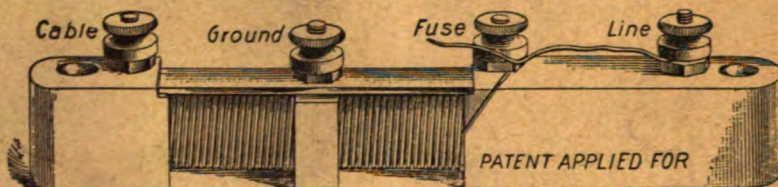
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A Semi-Monthly Journal Devoted to Land Line Telegraphs and Submarine Cable Interests

ESTABLISHED
1883

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VOL. XXIV., No. 2.

NEW YORK, JANUARY 16, 1906.

Whole No. 544.



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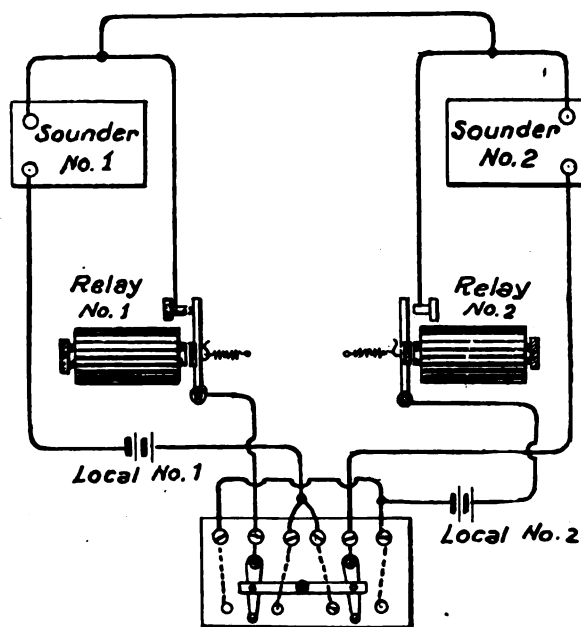
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lever to the other disk. With the double-switch



6 Point Reversible Switch.

FIGURE 1

SOME POINTS ON ELECTRICITY.

Questions Answered.

BY WILLIS H. JONES.

Some time ago a correspondent requested this journal to show how a double three-point switch could be connected with the sounders of two separate single-line relay circuits in such a manner that by merely turning the switch lever to the left the respective relays would then control opposite sounders; that is to say, exchange sounders, temporarily, from one circuit to the other, and thus avoid the necessity of changing an operator's position.

The accompanying diagram, Fig. 1, illustrates the manner in which the connections may be arranged, and how, in fact, the inquirer writes he has since been using it with satisfactory results.

It is hardly probable, however, that there should be much demand for the double-switch arrangement when one three-point switch may be used, as shown in Fig. 2, and perform practically the same service in a much simpler manner.

In the latter arrangement, however, but one sounder circuit (the one used) will be closed, as the other is left open by the shifting of the switch

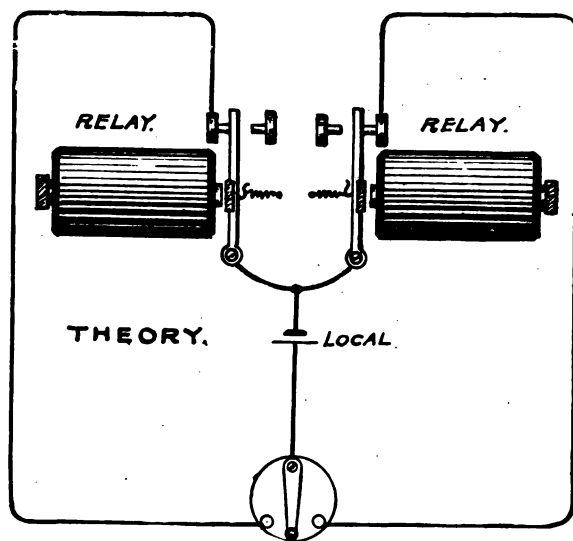


FIGURE 2.

method neither local circuit is opened by the shift.

SKIN EFFECT AND DRIP.

Another correspondent desires to learn the

meaning of the term "skin effect," as sometimes applied to the action of an electric current flowing in a conductor under certain conditions, and he also wishes to know what constitutes a "drip" in an electric circuit.

The word "skin" is used because it fittingly describes the manner in which the current due to an alternating-current dynamo is distributed throughout the metal composing the conducting wire.

It has been demonstrated that when an alternating current is caused to flow through a wire the current is not distributed evenly throughout the mass of the conductor, as is supposed to be the rule with direct currents, but flows in a much greater volume at or around the circumference than it does through and near the center. In fact, it is believed that no current at all flows through the center of the wire, especially when the frequency of current alternations is great. The density of the current is always greatest at the surface, and decreases rapidly toward the center of the conductor.

Because the current volume thus lies principally on or around the surface, it forms a so-called electric skin, hence the appropriate application of the word.

The skin effect properly relates to apparent alterations in the value of the ohmic resistance of a metal conductor due to this peculiar distribution of current.

As an alternating current is not permitted to utilize the central portion of the wire, the "skin effect" produces therein an alteration in the conductivity of the circuit equivalent to that which would result from a reduction in the gauge or carrying capacity of the conductor. For this reason the normal resistance of the conductor is apparently increased, and the effective value thereof regulated by the weight of that portion or remaining proportion of the mass actually utilized in conveying current.

Again, as the value of the "skin effect" in a conductor increases with the diameter of the wire, and the frequency of current alternations, it follows that this phenomenon is not merely an interesting curiosity, but a formidable factor, which must be considered in the selection of a proper conductor for an alternating current.

In reply to the second question we would state that a "drip" in an electric circuit is any device that will cause the water flowing along the wire to drip to the ground before reaching the point where the conductor enters a building. Usually it consists of a half loop, like the letter U, and is connected between two insulators in the "leading in" conductor between the line pole and the station office.

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, Inc., June 1 to July 16, Inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Prac-

tical Information for Operators, October 1 to Dec. 1, Inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, Inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power From the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate Its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906.]

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

Recent Telegraph Patents.

A patent, No. 808,451, for a signaling system, has been granted to Maynard W. Hamblin, of New York. Complete fire alarm system, also adapted to messenger calls employing various detail arrangements in the receiving relays and circuits.

A patent, No. 808,366, for a telegraph transmitter, has been issued to Benjamin P. Hayes and Sigel H. Gill, of Topeka, Kan. A typewriter transmitter having a drum with segments or contacts thereon which is released to move by the various keys. The purpose is to give a more uniform distribution of the transmitting impulses.

Personal Mention.

Mr. Charles A. Tinker, formerly general superintendent of the Eastern division of the Western Union Telegraph Company, New York, has gone to Pasadena, Cal., where he will spend the winter with his daughter, Mrs. Tracey Smith, now a resident of that place. The evening before his departure, Mr. Tinker, who has just reached his sixty-eighth birthday, was tendered a complimentary dinner by a neighbor. It was a delightful little affair, at which a number of telegraph men were present. After dinner speeches were made by Mr. Tinker, Col. A. B. Chandler, James Merrihew, Walter C. Humstone and others.

Obituary.

A. D. McCormick, formerly an Associated Press operator at New London, Conn., died of consumption at Norwich, Conn., December 23.

Sir Henry C. Fisher, C. M. G., a director of the Eastern Telegraph Company, London, Eng., and until 1898 controller at the Central Telegraph Office of the General Post Office, died in London on November 30. He was seventy-two years of age.

Michael M. O'Donnell, aged forty years, a Detroit operator, died in that city December 23, pneumonia. For the past fifteen years, O'Donnell had been connected with the Western Union Telegraph Company, and for five years been manager of a branch office.

The Submarine Cable.

Mr. Charles S. Priest has been appointed electrician of the Commercial Cable Company with headquarters at New York, vice Charles Cuttriss, deceased.

The difficulties of maintaining remote cable stations in mid-ocean are illustrated in the following special dispatch from Victoria, B. C., of December 24: "The steamer Miowera, which arrived yesterday from Australia, reports that when she arrived at Fanning Island the cable staff were without provisions and were living on coconuts."

The statement is published in Caracas, Venezuela, that the French Cable Company refuses to pay the municipal tax necessitated by the annulment of its contract. A delay has been granted extending time for payment to the middle of January. In the event of the closing of the cable, in order to avoid interruption of the service the national government is preparing swift steamships to carry cablegrams between Macuro and Trinidad, for transmission by the English cable.

A banquet was recently given at Cologne by the German-Dutch Telegraph Company to celebrate the opening to traffic of the company's cable between Menado, Yap, Guam and Shanghai. In addition to the directors of the company, there were also present representatives of the German and Dutch Governments and of the allied concerns, the German Atlantic Telegraph Company, and the Nordenham cable factory, which made the cable in question. State Secretary Kraetke, who delivered the first speech, gave a review of the political development of the scheme and mentioned that he frequently had occasion to report the progress made to the Kaiser, who took great interest in the work, as also did the Queen of Holland.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. H. O. Turner has been appointed manager of the office at Live Oak, Fla., vice E. C. Griffen, resigned.

Mr. H. H. Honnoll, formerly repeater chief at Memphis, Tenn., has accepted a position with the American Telephone and Telegraph Company, of that city. Mr. Honnoll was relieved by Mr. S. G. Quisenberry.

Mr. H. B. Froehle, bookkeeper for the past three years of the Dayton, O., office, has been promoted to the position of chief operator, vice E. J. Lane, retired on pension. J. R. Clark takes Mr. Froehle's position at the bookkeeper's desk.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. John Baskerville has been appointed manager of the Scranton, Pa., office, vice G. R. Rig-

don, resigned on account of ill health. Mr. Baskerville has been connected with the office for fifteen years, his entry thereto being as a messenger boy.

Mr. J. C. Smith, cashier of the Postal Telegraph-Cable Company, Detroit, Mich., has been promoted to the managership of the office relieving Mr. H. J. Kinnucan of the duties thereof. The latter will now devote his entire time to the superintendency of the district over which he presides. Mr. E. W. Monnien, who has been in the service at Detroit for a number of years, has been advanced to the position of cashier.

The Railroad.

Mr. N. D. Ballantine, formerly superintendent of telegraph of the Kansas City Southern Railroad, Kansas City, Mo., now superintendent of car service, Chicago, Rock Island and Pacific Railroad, has removed his headquarters to Chicago, Ill.

Mr. E. J. Little, superintendent of telegraph of the Great Northern Railroad Company, St. Paul, Minn., was a recent New York visitor. He came East on business connected with the service. He visited Baltimore and Washington before returning to his home.

Henry V. Miller, inventor of the Miller block signal, in which he was engaged in promoting, and who at one time was superintendent of telegraph of the Chicago and Alton Railway, died in Chicago December 27, last. He was born in Marion, Ohio, February 14, 1848.

The Railway Signal Association met at the Grand Union Hotel in New York, Tuesday, January 9. The following papers were presented: "Signaling on the East Bengal State Railway," by George K. Rogers; "The Care of Storage Battery as Used for Signaling Devices," by H. W. Lewis; "Preliminary Report of Installation and Maintenance of Storage Batteries," by I. S. Raymer; "Line Wire," by F. F. Fowle.

The directors of the New York Central and of the railroads allied with it have decided to pension their old employees, and a committee has been appointed to prepare a plan. An age limit will be established, and there will be regulations for the retirement of the superannuated, similar to those now in force on a number of other roads. The members of the committee are Vice-Presidents W. C. Brown and John Carstensen, General Superintendent Deems, of the mechanical department, and the general managers of the four principal roads in the New York Central system—Messrs. A. H. Smith, W. H. Marshall, R. H. L'Hommedieu and C. E. Schaff. Before long this committee will make its report, establishing the rules and regulations, and naming the date when pension allowances will begin. The Boston and Maine Railroad has also determined to establish a pension system.

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General Mention.

Mr. Frederick Louck, an operator of the Baltimore Western Union office, was married on December 23.

The Philadelphia, Reading and Pottsville Telegraph Company, operated in connection with the Western Union Telegraph Company, has moved into a new and modernly equipped office at Pottsville, Pa.

Mr. D. J. O'Connor, who recently resigned his position as chief despatcher of the Grand Trunk Railroad, Stratford, Ont., has taken up his residence in Toronto, in connection with a fraternal assurance organization.

Mr. Paul S. Pearman has entered the service of the brokerage firm of W. G. Phillips and Company on their relay circuit out of Cisco, Tex. Mr. Phillips himself is a well-known old time telegrapher of Chicago.

Mr. T. W. McKenzie, a Canadian Pacific Railroad station agent at Kenton, Man., has secured patents in the United States and Canada on a device that will call any office he may desire, sign his own call and do it as perfectly as any operator can.

Mr. A. A. Briggs, chief operator of the Postal Telegraph-Cable Company at Cleveland, Ohio, was presented recently with a gold watch and chain by the employees of the company, the presentation being made through E. W. Collins, the superintendent.

A bill has been introduced into the New York State Legislature creating a board of control of public utilities in New York city, including street, elevated and subway railroads, ferries, electrical subways, gas, electric light or power, steam, water supply, telephone and telegraph corporations.

Aerial cables will often rust and break down in the interior when there is no manifestation of this on the exterior. Sometimes it can be detected by a certain slackness and yielding to pressure at the point infected. Corrosive water and fumes may be responsible for this hidden decay.

The Western Union Telegraph Company at Long Branch, N. J., has removed from its office in the Patten Building, corner Broadway and Third avenue, which it has occupied for the past fifteen years, to 187 Broadway. Entire new office equipment has been placed in the new quarters.

Mr. Frank B. Knight, general agent of the American Telephone and Telegraph Company, Dallas, Tex., a former telegrapher and at one time manager of the Western Union office at Omaha, Neb., has the sympathy of his friends in the death of his wife, which occurred on January 1.

The "Pacific Goldsmith," of San Francisco, of December 1, 1905, shows a print on its front cover of Mr. I. N. Miller, Jr., superintendent of the American District Telegraph Company, of

that city, which operates a burglar alarm system in connection with its other features, the efficiency of which is highly commended.

T. W. Midkiff, an operator at Hoxie, Ark., was deliberately shot and killed December 28 last, by a man because a reply to a telegram sent by the latter was not received as quickly as he wished. He was told that he might expect a reply about four o'clock in the afternoon, yet returned to the office before two and demanded an answer. On being informed that it had not been received, he drew his revolver and shot Midkiff through the head.

The Western Union Telegraph Company at Ashland, Ore., will, when the premises are finished, remove from its present quarters in the Sherwin-Van Sant building, to a new office, 20x88 feet in size, on the first floor of a new building now under construction adjoining the Bank of Ashland. This change will afford needed room for the growing business of this office. The equipment in every particular will be strictly up-to-date.

The reunion of the Old Time Telegraphers in New York in August last, in many ways the most notable gathering of the Association ever held, witnessed the coming together of many former friends, whose separation in some instances had been that of years. One such meeting was that which occurred between W. G. Brownson, of Toledo, O., and Henry A. Reed, of New York, both forty-niners of the telegraph. They had not seen each other in fifty-three years and the greeting between the two men, who happened to be located at the same banquet table and who have now passed the allotted three score years and ten, was most cordial. Both have long since abandoned telegraphy and achieved success in other vocations. Mr. Reed as the managing head of the Bishop Gutta Percha Company, of New York, and Mr. Brownson as the medical electrician of the Electro-Chemical Ring Company, of Toledo.

Wireless Telegraphy.

Wireless telegraph messages from Guantanamo, Cuba, have been received at the Charlestown Navy Yard, Boston, a distance of 1,700 miles.

A patent, No. 808,641-642, for wireless telegraphy and telegraphic keyboard apparatus, has been obtained by Patrick B. Delany, of South Orange, N. J.

General A. W. Greeley, chief signal officer of the United States army, announces that the Signal Corps of the army has perfected the invention of wireless telegraph receivers which will enable the army to intercept and read the messages of every system of wireless telegraphy in use.

After an exhaustive examination and nearly three years' experience with the wireless telegraph apparatus installed by the Telefunken Company in 1902, at Rosalia and Guaymas, Mexico, the Mexican

government has awarded this company another contract. The Rosalia and Guaymas plants have enabled the government to maintain an uninterrupted communication across the Gulf of California. The points to be connected under the new award are Mazatlan, Sinaloa and San Jose del Cabo, the distance being about 325 kilometres.

The collection of meteorological observations from vessels at sea by means of wireless telegraphy and the simultaneous issuance of weather forecasts and storm warnings to these vessels, based upon the observations thus collected, is the latest work on which the United States Weather Bureau has entered. A special code has been prepared by means of which exact information as to date and hour, latitude and longitude of the vessel, the atmospheric pressure and temperature, the force and direction of the wind, and the character of the sky is all compressed into four words. The system may enable the telegraphing to transatlantic liners of information as to the limit of fog and ice on the Grand Banks, so that, by slightly altering their course, they may steer clear of these dangers.

The information of a syndicate to supply the English provincial newspapers with news from London by wireless telegraphy is being considered, says a special cablegram to a New York newspaper. H. Cuthbert Hall, managing director of the Marconi Company, told a reporter that his company had been approached by a number of newspapers in the North of England, who suggested the formation of an agency for the transmission of news to them by wireless. On the possibilities of wireless proving effective for inland work Mr. Hall said: "We could erect a high-power station, from which we could send messages to any part of England, and they would be received simultaneously in the different towns. We could distribute news at the same special speed as the post office and with no higher percentage of errors, and by the medium of an agency the smaller towns could be supplied with news from London at a cost within their means. Before wireless could be used for this purpose of transmitting news the postoffice authorities, which control the telegraph in England, would have to grant permission."

The Chicago Record-Herald has assigned Mr. Walter Wellman, the journalist, to reach the North Pole in a Santos-Dumont airship, the start to be made in April. From an easily reached base of operations in Northern Spitzbergen he will have but 550 geographical miles to go to the pole, and a like distance for the return voyage. The whole 1,200 miles means but 100 hours of motoring at 12 miles an hour. Santos-Dumont has repeatedly made from 19 to 23 miles an hour with small airships equipped with relatively small motors. The airship will be the largest practicable one ever built. It will be 196 feet long and its greatest diameter will be forty-nine feet. Seven thousand pounds will be the weight of the ship and its equipment complete, leaving 8,000 pounds for cargo. The ship will be provided with three motors, with a combined energy of seventy

horsepower. Wireless telegraphy stations will be established at Spitzbergen and Hammerfest, Norway, 600 miles distant. Further than this a wireless equipment will be carried in the airship, and it will be the effort to send frequent, if possible, daily dispatches to the outside world throughout all the time the expedition is in the arctic regions, even from the pole itself, if the courageous aeronauts have the good fortune to reach it.

Reminiscences of the Early Days of the Telegraph in England.

F. W. Dore, a former English telegrapher, contributes to the Transmitter of Sydney, New South Wales, an interesting reminiscence of the telegraph of the old days in England. He says: "Shortly after leaving school, in the year 1845, I attended a lecture at the Polytechnic Institute, Bristol, England, the subject being the electric telegraph, which at that period was in its infancy; in fact, the general public scarcely knew of its existence. In the following year, 1846, Messrs. Cooke and Wheatstone patented their invention, and a company was incorporated to exploit it. Several gentlemen were added to the directorship, with Mr. J. L. Ricardo as chairman, and Mr. Wishaw as secretary.

"Telegraph lines were being erected to some of the large towns, such as Birmingham, Manchester, Liverpool, etc. The first city placed in telegraphic communication was Southampton, ninety miles from London, and for some months this was the only place thus reached from the metropolis. The telegraph was completed to the temporary office in the Strand, near Waterloo Bridge, so that the line might be near it. There were about fifty students hard at work learning the Cooke and Wheatstone systems, myself being among the number. We had several double and single needle instruments connected on short circuit, and in the year 1847 the new office was opened in Founders Court, Lothbury, City, London. It was a very large and handsome building, with open ceiling, side counters and galleries. The counters were for taking in telegrams, which were sent for transmission up to the galleries. The opening of the building was a great event, but the public were not sufficiently enlarged or telegraphically educated in their ideas as to telegraph communication, and various curtailments had to be made. The number of instruments was considerably reduced until such time as a more substantial hold had been made on the people. The instruments were of a very showy kind and much too expensive. They were simply a double galvanometer type, with the alphabet added on; the single-needle were the same, excepting the alphabet, with elaborately carved mahogany cases.

"In the meantime, Professor Alexander Bain introduced his stupendous electrical printing telegraph, which was to astonish all Europe by transmitting a thousand words per minute.

There is no doubt of its being one of the greatest wonders in telegraphy that was ever known, but the system was never carried out, simply because of its expense. I will describe it as near as possible in detail. First, there was a large open square box, about the size of a small dining table; a large amalgamated brass cylinder on a small axis was placed right across the box. Chemicals were provided in the shape of liquid ammonia, prussiate of potash and nitric acid. These were all mixed together, and prepared paper of the same size as the cylinder was dipped in a bath containing a solution of the above and then placed around the cylinder, which was made to revolve by a wheel like a steam engine, always taking care to keep the solution quite damp. The main line wire was connected by a steel pliable needle with a brass suspender, and as the machine revolved the matter was transmitted from the sending station on to the cylinder. All the printing had to be translated as it was read off, so that it required three hands to receive the matter at the rate of one thousand words per minute. At the sending station all the letters had to be punched out to their proper size, ordinary narrow cartridge paper being used; the paper reel was then fixed to its proper position and a steel pliable needle passed over the portion cut out, and as it passed over the rollers on to the metal ones underneath, the circuit was complete, and it found its way to the terminal station through the cylinder. The company gave Professor Bain a fair trial, but as the expense was enormous they gave up the idea of using his very clever invention, so that those operators who had been employed were disbanded, and, like Othello, their occupation was gone.

"Professor Bain was awarded £1,000 by the Royal Society of England for his discovery of the earth wire.

"I was more fortunate in being kept on, as I had already learned the needle telegraph. I was, therefore, sent for by the secretary and ordered to Liverpool, where I remained until the agitated state of Ireland caused me to be transferred, through no fault of my own. The telegraph company received a parcel of press matter by the Dublin steamer almost daily; the contents were transmitted to the London press agent. However, one morning one of the packets contained a hoax informing the Government that the whole of the south of Ireland was in open rebellion. The Cabinet was summoned, with Lord John Russell as Premier. On discovery of the hoax the staff at Liverpool was removed. I was sent to Normanton, an important junction in Yorkshire, where I remained three years. Many things happened during the time I was stationed there. On one occasion the London Times sent down a special reporter to furnish a report of the speeches of Richard Cobden, John Bright, etc., at the Corn Exchange, Wakefield, three miles distant. Four columns of news were transmitted in about five hours, a great feat in those days, and when it

appeared in close print was set down as a triumph of telegraphy.

The charges for transmitting a telegram in the year 1848, in England, were not considered high, the telegraph being new to the public. From London to Liverpool wastwelveshillings for twenty words; Edinburgh and Glasgow, sixteen shillings; Manchester, ten shillings; and between Manchester and Liverpool, a distance of thirty miles, two shillings sixpence. But ultimately, upon the Electric Telegraph Company receiving opposition from the Magnetic and British Telegraph Company, the rates were reduced to a maximum of five shillings for twenty words for any distance. Comparing these rates with those of the present time, it will be seen what strides have been made in the advancement and progress of telegraphy."

Philadelphia Electrical Aid Society.

The annual meeting of the Electrical Aid Society, held January 8, in the Odd Fellows' Temple, was, as usual, largely attended. Harmony and good fellowship prevailed during the entire evening, especially so during the banquet which followed the business session. Expressions of regret came from all sides when it became generally known that Mr. Frank E. Maize, who has been president of the society for several years, declined because of lack of time to take the office again. Resolutions of regret were passed; also a vote of thanks to the retiring president for the good work performed by him during his term of office. Mr. Andrew S. Weir was unanimously elected president, to succeed Mr. Maize. Other officers elected were: J. W. Fitzpatrick, vice-president; W. E. Vanarsdale, recording secretary; R. C. Murray, Jr., financial secretary; H. W. Hetzel, treasurer. Executive committee: F. E. Maize, J. H. Wilson and M. A. Derr; trustees: C. A. Stimpson, J. H. Kelly and H. Bernstein; auditing committee: C. Christine, H. Wobensmith and L. Mintzer. Membership was increased during 1905 by 113, making the total number 586. There were four deaths during the year. Sick and death benefits paid during 1905 amounted to \$2,106, leaving a surplus on hand of \$4,293.11. Mr. C. B. Wood was elected an honorary member of the society.

We desire to state that back numbers of this paper, those issued more than six months prior to any current date, will be charged for at the rate of twenty-five cents apiece when they can be furnished. This price is fixed because of the necessarily limited stock we carry, and of the difficulty we sometimes have in filling an order. Oftentimes the request is for papers of a more or less remote date, with the expectancy of being charged at but ten cents a copy, whereas in order to obtain the desired issue we are ourselves frequently obliged to pay the larger sum, or even more. The growing value of complete files of TELEGRAPH AGE should cause our readers to carefully preserve their issues.

TELEGRAPH AGE will furnish operators with just the kind of practical information they require.

Dangers in Loading and Unloading of Poles.

BY ROBERT ELLIS.

Among all the occupations fraught with danger, in which men hazard their lives, and of which we rarely hear recounted in detailed description, is the calling of the linemen, whether it be in the telegraph, the telephone, or the electric light service. It is a hard life from every point of view, and no occupation other than that of the lumberman can be compared with it for its arduous character. It is a life closely allied with that of the lumber jacks, of which they are accessories, shown in the initiative step taken when these stalwart sons of the forest lay low the mighty trees. The timber, after being cut and permitted to season, is hauled to the streams, down which it floats to the distant mills, where it is stripped of its bark. It is then ready for transportation by rail to points where railroad or line construction is projected. The poles are then set, their tops wedged and gained, uniformly armed, braces put on, and then, with the addition of steel pins and green petticoat glass, you have the complete transformation of the once green decked monarchs of the woods.

Almost simultaneously with the completion of the rail roadbed, the telegraph company prepare the way for construction. A sufficient number of flat cars or gondolas are at once requested from the railroad company along whose road it is proposed to erect a telegraph line. The cars are placed alongside the poles, which lay parallel to the tracks ready for distribution. The first thing to do is to select two of the lightest and straightest poles for skids, but these must be of such stoutness as to withstand the heavy weight which will roll over them; the tops of the skids are placed on the top of the side frames of the gondolas, within five feet from both ends, and then fastened with wire, if possible. On the flat car, the ends of the skids are placed on the edge of the flooring of the car, and fastened at each end to the sockets with wire; the butts of the skids invariably being against the foremost tier of poles, affording a brace. Two of the most skillful linemen are selected to remain on the car in order to cant or pry the poles into position, when rolled onto the car, the rest of the men with their cant hooks and steel bars begin prying the interlocking poles. As soon as one is released, the cant hooks are applied deftly, and soon the pole is rolled aboard. If the poles are unusually heavy, a rope of seven-eighths inch thickness is used, one end of which is fastened to the suspension rod on the other side of the car, and a rolling hitch made on the middle of the pole to be loaded; the other end is passed up to the men stationed on the car, whereby they commence hauling the pole up the skids. The accumulated slack is taken in by another man, and held securely, as inch by inch the pole creeps up the skids, while half a dozen men selected

for their skill in handling the cant hook are assigned to utilize the hooks to accelerate its movement.

In addition to rolling the pole up the steep incline, the cant hook men continually resort to the use of the hooks to straighten the pole, as the rope often slips from its center position, thereby shifting its position on the skids. The rope in question aids materially in the speedy handling of the poles and minimizes the danger which constantly threatens the canthook men in this undertaking, whereas, if one man's canthook cuts out, while the pole is just about to be deposited, at the same time that the others are taking a fresh hold, the pole would come tearing down upon them from the top of the skids, which in some cases are placed at about an angle of forty-five degrees, and would crush those who are so unfortunate as to be in its path. Of course this only applies to poles handled without the use of rope.

In loading flat cars, it is first necessary to cut sufficient hardwood stakes; these are to be made wedge-shaped and driven firmly into the sockets of the cars which they are loading, on the opposite side of the car. As soon as a sufficient complement or a minimum carload has been thrown in, they are enclosed with the same number of stakes as on the other side, and then strapped securely with wire, this being done to obviate any danger of their getting away while the cars are in motion. The same procedure is undergone with the gondolas, only that an increased number of poles can be tiered in these cars.

After the cars have been loaded and strapped, they are ready for distribution, the railroad company assigning an engine to haul the cars away.

At the point of distribution, the minimum speed allowed is six miles an hour, as the giving and taking of slack of train is liable to throw the men between the cars, if they are not already protected by crude nets.

When the first pole is to be thrown off, at a given signal from one of the men detailed on the engine, who counts the revolutions of the engine driver, which determines the location for the pole, the men cut a couple of the foremost stakes to the level of the first tier, and the top of the pole is then carried over the front end of the car, allowing the top of the pole to approach close to the ground; the butt is then thrown over, clear of the back end of the car. This method of distributing poles is much safer, where the liability of damage to material is concerned, than by throwing them off with both butt and top striking the ground simultaneously, as a good many poles break that way.

As soon as one tier of poles are unloaded, the stakes are cut further, and so on until the last tier is picked up and thrown off.

In the gondola, the last tiers are picked up bodily and pried over, the men picking up the top and carrying and extending it over the side

of the front end of the car, while one or two of the men follow up with steel bars resting on top of the frame, and immediately under the middle part of the pole; the pole being then evenly balanced, the butt is pried over and to the ground. If the poles are extremely heavy, the rope is recommended as in loading, as the risk is always diminished when the rope is resorted to, but if the rope is not used, and any of the stakes give way, while they are in the act of hurling a pole over, then there is trouble ahead for the linemen, for the poles would then be released, and roll indiscriminately off the cars, engulfing any of the men who were unfortunate enough as to go with them.

The Magnetic Club of Philadelphia.

The annual meeting of the Magnetic Club of Philadelphia was held in that city on Saturday evening, January 6. The reports of the secretary and treasurer exhibited a satisfactory condition of the club. It was decided to hold only two banquets annually, one in February and the other in October. The next dinner will take place on Saturday, February 24.

The following officers were unanimously elected: President, John C. Sager; first vice-president, F. W. Griffin; second vice-president, F. H. Lincoln; third vice-president, J. W. Reed; fourth vice-president, J. D. Israel; secretary, C. B. Wood; treasurer, H. W. Hetzel.

Governing Committee, for a term of two years: W. S. Burleigh, E. C. Boileau, W. C. L. Eglin, J. W. Kelly, C. Curtis Ingalls, A. H. Manwaring, A. G. Wallace. A. S. Weir was elected chairman of the governing committee.

The Forgotten Brown.

"There was William J. Brown, who put through the House the appropriation of \$30,000 to build the first telegraph line between Washington and Baltimore. He did the world an immense service, yet at the next election he received hardly enough votes to count. The opposition put up a man who ridiculed the idea of sending messages by lightning, and he beat Brown by thousands of votes."

Speaker Cannon related this incident in his holiday statement as evidence of the power of the people to wipe a man off the political map when they felt so inclined; to settle him so that he will soon be forgotten. Mr. Cannon's illustration was a good one, even though it showed that the people sometimes use that power without the best judgment, and relegate to obscurity a man they should delight to honor.

It can be taken for granted that the Speaker has not erred about the record of the forgotten Brown, though the histories and the encyclopedias fail to mention him as an important factor in securing from Congress an appropriation of \$30,000 "to test the practicability of establishing

a system of electro-magnetic telegraph in the United States." That honor has always been accorded to Hon. John P. Kennedy, a distinguished citizen of the Baltimore of sixty years ago, who was then chairman of the House committee to which the bill had been referred. Brown, for aught the records show, may have been the father of the bill in the House at the session of 1842, but years before Morse had humbly petitioned Congress to aid him, but the incredulous lawmakers of those days ridiculed his invention as a chimera, and refused to listen to his arguments. If Brown, in a later Congress, offered the bill, had it referred to the Kennedy committee, and aided in securing a favorable report and final passage, then let him be forgotten no longer, but put his name well up in the long list of those whom Americans delight to honor.

Baltimore has a right to make a plea for the forgotten Brown, for to this city came the first telegraph message sent over any considerable distance, though tests had been made a few months before for short distances outside of Washington. It was on Friday, May 24, 1844, that the line between Washington and Baltimore was completed and magnetic and recording instruments were attached to the ends of the wires in the Supreme Court Chamber at the capital, and in the depot of the Baltimore and Ohio Railroad, then on Pratt street, near Light, in Baltimore. Everything being ready, Morse, in Washington, sent a messenger to Miss Annie Ellsworth, the daughter of the Commissioner of Patents, to inform her that the telegraph awaited her message. He had promised her this honor as a reward for having given him the earliest intelligence of the passage of the appropriation bill. In response to his announcement she sent for transmission that famous and reverent message, the first formal dispatch ever sent by telegraph: "What hath God wrought!"

Grand Trunk Pacific Telegraphs.

Application will be made to the next session of the Canadian Parliament for the incorporation of the Grand Trunk Pacific Telegraph Company, with power to carry on a telegraph or telephone business anywhere in Canada. The company asks the right to use the wireless system if it sees fit to do so; also to connect with or enter into arrangements with other companies in Canada. The telegraphs upon the Grand Trunk Railway, the parent company, are now operated by the Great North Western in Canada in connection with the Western Union Telegraph Company in the United States. Mr. A. B. Smith, of the Great North Western service, was recently appointed to take charge of the Grand Trunk Pacific telegraphs.

Those who contemplate subscribing for **TELEGRAPH AGE**, and who would first like to inspect a sample copy, should not fail to write for the same.

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NEW YORK, JANUARY 16, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientele. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

It has been proposed that a new department of the government at Washington be established, to be called the "Highway" department. It is designed to give the new department the supervision of all steam and electric railways, telegraph and telephone lines, waterways, pipe lines and express companies doing an interstate business.

In Response to Our Friends.

TELEGRAPH AGE was the recipient during the holidays of many congratulatory letters and messages expressive of good will from its friends in all parts of the world. Representatives of the telegraphs of numerous foreign governments who receive TELEGRAPH AGE regularly, kindly sent their compliments and well wishes. Notably among such assurances were those received from

Kashiro Kawasumi, of Tokio, Japan; Gati Béla, Buda-Pesth, Austria-Hungary; John Gavey, London, England; and W. R. Howard, Wellington, New Zealand. The Central Executive Association of the Irish Post Office Clerks, Dublin, Ireland, also sent a greeting. From this country the remembrances from operators, chief operators, managers and superintendents and presidents were numerous and hearty. And last, but not least, was the message from our old friend, P. V. De Graw, Fourth Assistant Postmaster General, who never forgets his old-time telegraph associations.

In acknowledging these testimonials of friendship, of affection and of esteem, frequently so cordially expressed, TELEGRAPH AGE is deeply sensible of the good will thus made manifest on the part of so many toward this journal. It will long be treasured as one of the most appreciated and pleasant experiences occurring in many years of journalistic life; and the sincere thanks that are returned herewith for so generous a measure of expression must, from the nature of the case, be comprehensive in utterance as they are in sincerity of meaning.

Changes in the Personnel of the Telegraph.

A retrospect of life, even of but a few years, is apt to be startling in its revelations. The frequency of change, almost unnoticed during the period of occurrence, in the thick of which we ourselves may be actors, becomes more apparent when it is looked upon and estimated as a whole. Men in active and intimate association to-day become separated to-morrow, frequently dropping wholly out of one another's lives as completely almost as if they had never met; and the query of but a few years hence discloses the fact that in a distant place perhaps, far removed from earlier scenes, the friend whom we knew so well in former years, has climbed successfully the ladder of promotion, or has gone into other business beyond our ken, or may be worn out and with strength exhausted has laid down his burden and passed over to the great majority.

We are led to these reflections because of the changes that have occurred in the personnel of the telegraph about which we have been telling lately in these columns. We have gone back but a decade, or to be more exact, to 1894, the date when Telegraphers of To-day was published by the Editor of Telegraph Age, for data in our search for such changes as have occurred. The story as told indicates greater changes than perhaps any of us have realized, if, indeed, we have ever stopped to consider fitly the full extent and meaning involved therein. It has aroused interest and surprise in all departments of the telegraph service the country over, and numerous letters expressive of reminiscence, of inquiry and of sympathy have reached us from those who have been especially touched by the narration. A sense of companionship has been felt in the

hearts of many, for after all when we pause long enough to recall the past, with some of us too frequently permitted to drop into comparative oblivion, to bring up in memory's review those whom we formerly knew and esteemed and trace the record of their lives, a tenderness of thought and emotion is evoked to which, in this work-a-day world of ours, we are too prone to be strangers. It is good, then, sometimes to pause long enough to meditate, to bring the old days, often so fragrant with association, to fresh recollection, for in the long transcript of change we have indicated there is abundant thought for reflection, an opportunity presented for looking backward that cannot fail to confer benefit in retroactive impulse.

The reader who has followed carefully the four articles as they have appeared, the last elsewhere in this issue, cannot fail to have noticed the numerous changes due to death and other causes that have occurred in the ranks of those who have been prominently identified with the telegraph. Within the period named the executive heads of both the Western Union Telegraph Company and the Postal Telegraph-Cable Company have been changed. One vice-president has died, several general superintendents have likewise passed away, and death has also claimed a dozen or more district superintendents. There has been a gradual and constant shifting of telegraph forces, a pushing forward and a dropping out.

While the telegraph possibly may not afford a high official position for all in its employ who are possessed of intelligence and ambition, the ever recurring changes in the personnel in every department of its work is nevertheless constantly opening places of preferment for energetic natures and bright minds. The future of the telegraph is vested already in the hands of those who in some manner are now contributing to its progress, and thereby directing its energies. Fidelity of purpose, largeness and clarity of vision are attributes of character that will finally gain recognition and reward, all of which may be clearly recognized from the lesson to be drawn from the changes in the telegraph to which reference has been made.

Legal Intelligence.

A messenger company is not liable for losses occasioned by its boys unless special arrangements are made with it, according to a decision of the full bench of the Massachusetts supreme court, rendered January 5, in the suit of George B. Haskell against the Boston district messenger company, to recover \$58.33, collected by a boy sent to him by the company in response to a call.

The plaintiff gave the boy a receipted bill for rent and sent him to collect the money. He did so, but failed to return it to the plaintiff, who then sought to hold the company for the amount.

He contended the company acted as a common carrier in receiving the bill and undertaking to bring back the money. The court says the evidence did not tend to show that. It says the company undertook to furnish messengers to be used by its employers in any way in which messengers properly could be employed. If special or peculiar service was wanted, special arrangements were to be made for it.

In the ordinary conduct of its business the defendant did not assume any control of the work in which the messengers were to be employed, and usually had no knowledge of it until after it was completed. Even then it had no knowledge of the nature of the message delivered or the particulars of the service.

The employer was left to direct the messenger to determine what he should do and how he should do it, subject only to an implied understanding that he should not be called upon to render service of a different kind from that which can properly be performed by messengers. In this service the messenger became, for a time, a servant of the employer, while he was still in the general service of the defendant.

The court holds that the company is not a common carrier or insurer of everything intrusted to the messengers and that it impliedly contracts that the messengers whom it furnished are suitable and proper persons for the performance of the ordinary duties of messengers so far as the exercise of ordinary care in the selection and employment of them will enable it to procure such persons.

"If in the delivery of Christmas presents, or of bills, statements, catalogues, etc.," say the court, the defendant become a common carrier, it is liable as such. But that can be only by an arrangement different from that made by this plaintiff.

The court holds that the company is not liable for the dishonesty of its messengers under its ordinary implied contract, unless there was a failure to use proper care in the selection of the messengers.

Mr. Bates Recalls the Death of Lincoln.

Mr. David H. Bates, who was a cipher telegraph operator in the War Department during the Civil War, and whose reminiscences have found frequent expression in *TELEGRAPH AGE*, is quoted in a western paper regarding a day great and terrible in the history of our country:

"On the afternoon of Friday, April 14, 1865, the day of his assassination, Mr. Lincoln made his accustomed call at the War Department telegraph office. He came earlier than usual, however, because, as we afterwards learned, of his expected visit in the evening to Ford's theatre.

"Although I was on duty at the time, I have no distinct remembrance of the occasion, for what occurred a few hours later was so appalling that memory retained nothing clearly except that

which took place after the awful news was received.

"First came word that the President was shot; then, horror following fast upon horror, the severe attack upon Secretary Seward, the frustrated efforts to reach and kill Secretary Stanton, Vice-President Johnson, and other members of the Government; and, as the successive accounts crystallized, a fearful dread filled every soul lest it should be found that the entire cabinet had been murdered. An hour or more of this awful suspense, and we received a message from Major Thomas T. Eckert, who had gone quickly with Secretary Stanton to the house on Tenth Street to which the President had been carried. This news simply assured us of the present safety of Stanton, while confirming our worst fears concerning the President.

"A relay of messengers was established between Major Eckert and the War Department, and all night long they carried their portentous news in the form of bulletins, in the handwriting of Secretary Stanton, addressed to Gen. John A. Dix, commanding general, New York city, and which were distributed to the press throughout the country. As these bulletins were spelled out in the Morse telegraph characters over the wires to leading points, it seemed to us whose fingers manipulated the keys, that never were sadder signals formed. Our hearts were at once stunned and on fire.

"The awfulness of the scenes transpiring before us, hushed us into silence, except for an occasional outburst of sorrow and amazement, and tears of which none of us were ashamed, were freely shed. As the hours slowly passed, hope revived as to the president's life being spared, but at last, about 7.30 A. M. the tension broke, and we knew for a certainty that he was dead. Then we looked out upon the light of day, which before we had not observed, or at least with consciousness, and the force of the blow seemed to be increased by recalling the previous day when we had last seen the President. We thought of his daily visits, and most of all, in the close presence of our great sorrow, did we think of his loving heart and the many evidences he had given us of the entire absence from that heart of anger, or resentment toward his country's enemies."

Why Technical Americans "Fail."

Sir William Preece, in distributing prizes at a recent English technical school commencement, is reported to have said:

I am frequently asked to recommend young men for positions of responsibility in various parts of the world, and often ask both Americans and Germans why, if their technical education was so very much superior to ours, they preferred Englishmen for foreign work, and the answer is that the American and Continental systems of education are really too good; that these men can quote formulae and data on any conceivable subject, but that when sent away from home in charge of work requiring initiative and self-reliance, these men fail entirely because they can only work to instructions and to formulae. The Englishman, on the other hand, who

is not so well educated, will tackle almost anything, and will carry it out to a successful issue.

A contemporary remarks, of course with no intended sarcasm: "So that is it. Americans fail entirely because they lack initiative and self-reliance, spirit and energy, nerve, vim and go, snap and ginger. By inference they are dependent creatures, meekly receiving instructions but not venturing beyond them; strong on precedent, but weak on originality; theoretical rather than practical; timid, not bold; and, presumably, mild, modest and shrinking. Strange that we haven't heard of all this before."

Pensioning a Faithful Employee.

After loyal and faithful service for more than half a century, Edward J. Lane, the oldest telegraph operator in Dayton, O., has been retired on a pension by the Western Union Telegraph Company as a mark of appreciation of his faithful service to them for more than fifty years. Mr. Lane's reminiscences are entertaining and interesting, touching, as they do, the history of Dayton during a most interesting period of the city's history. He has seen the business of the Western Union grow in Dayton from one operator who was office boy, bookkeeper, lineman and messenger, to the present large business force, with many employees and departments.

Mr. Lane can tell many interesting tales of his experience, and his retirement on a pension is a reward and tribute to his loyalty and faithfulness and the appreciation of his services by the company. He has always had the highest esteem of the officials of the company, and they hope he may live long to enjoy the rest and recreation he so much deserves.

The appreciation of Mr. Lane of his company's provision thus made for his old age is shown in his unbounded thanks to W. W. Brown, the manager of the Dayton office, and to I. N. Miller, of Cincinnati, the superintendent of his district, as well as to the executive head of the company in New York City.

Announcing the New Year.

Telegraphic signals announcing the year 1906 were flashed from the Naval Observatory at Washington by the telegraph companies. The signal was ticked off at 12, 1, 2 and 3 o'clock, so as to conform to the midnight hour for Washington, Central, Rocky Mountain, and Pacific Coast time, respectively. The midnight signal was repeated to all points readily available by the telegraph companies through the United States, to Honolulu, Guam and Manila, and Mexico; also to points in the West Indies and, where possible, cities in South America, England and France. The signal was also flashed to the wireless telegraph stations with a view to its communication to ships at sea.

Phillips' Code is standard. It should be in the hands of every operator. Price, \$1.00.

Sale of the Maine Telegraph Company to the Western Union.

The Maine Telegraph Company in effect went out of existence January 4, when the final steps were taken in the trade perfected some time since by which the Western Union Telegraph Company takes over the stock of the former.

The wires of the Maine Telegraph Company were leased by the Western Union fifty years ago, the lease expiring on Thursday, January 4. The lease was for a gross amount each year. There were 2,250 shares of stock of the Maine Telegraph Company, and the par value of these shares was \$50. By the terms of the sale, the shareholders receive \$57.50 a share for their stock. All of the shares were turned over except nineteen, which had not come in. After the transfer of the stock a new board of directors was chosen, F. A. Wilson and Hon. Charles E. Bliss being elected to membership in the same.

A. R. Brewer, secretary of the Western Union Telegraph Company, Rush Taggart, general counsel, and G. W. E. Atkins, superintendent of the control department, represented the Western Union at the time of transfer.

The Maine Telegraph Company's lines extend from Boston to Portland, over both divisions of the Boston and Maine Railroad; thence to Bangor on the highway along the coast, and also on the Maine Central Railroad in the interior of the state, and from Bangor east to the New Brunswick boundary, terminating at Calais, making six hundred miles of poles and eight hundred miles of wire. It is not generally known that Professor Samuel F. B. Morse himself, the inventor of the telegraph, was one of the incorporators of this company, and that the fifty years' lease made in 1855 was signed by Peter Cooper as president of the American Telegraph Company, and Hiram O. Alden, president of the Maine company.

The controlling consideration which led to the leasing of this company's line was the fact that it covered part of the land route between Hearts Content and New York City over which Atlantic cable messages must be transmitted, and in making the lease this was the governing factor with Peter Cooper, Cyrus W. Field and others connected with the American Telegraph Company, and with Hiram O. Alden and James Eddy, who were officers of both companies.

Of all those connected with the Maine Telegraph Company in that far-off time, we can recall but three among the living, namely, William B. Clum of the Postal Telegraph-Cable Company, New York, and C. E. Bliss, of Bangor, and Henry H. Ward, cashier of the Western Union Telegraph Company, New York.

When the Maine Telegraph Company was projected by Messrs. Alden and Eddy, and subscriptions to the stock solicited in towns through which it was proposed to locate the line, such was the skepticism at that time with regard to the practicability of communicating by electrical

appliances, viewed as a business venture, that citizens of several localities were in a measure coerced into giving their support to the enterprise by the scarcely serious intimation that it would be necessary for them to do so if they desired offices established in their towns. And yet almost from the very completion of the work the stock paid ten per cent. dividends, as it has continued to do to this day. When it is remembered that but two assessments of twelve and a half per cent. each were called in for the construction of the line, it is seen that the financial profit of the originators of the enterprise was considerable and, presumably, that the doubting Thomases were correspondingly chagrined.

The History, Manufacture and Properties of Drawn Copper Wire.

BY THOMAS B. DOOLITTLE,

IN THE HARVARD ENGINEERING JOURNAL.

(Continued from page 8, issue of January 1.)

In recent years great improvements have been made in the process of manufacture, which cover all operations from the ingot to the finished product. At the time recorded above it was the practice to roll a billet of copper, say of six or eight inches in width, into a long sheet and then, after being annealed, it was taken to a slitting machine and slit into square rods. These rods were tapered by means of a hammer, in order that they might be inserted far enough through the drawing die to be grappled on the opposite side, after which they were ready to be drawn into wire. This method of starting with a square rod had a distinct disadvantage for the reason that the corners were likely to lap and fold over in the process of drawing, thereby producing flaws or bad places in the wire, these flaws becoming more and more troublesome in the smaller sizes of wire. After having been drawn through a certain number of "holes," the surface of the wire becomes hardened to an extent which requires that it should be annealed before any further reduction in size is practicable. The new process is substantially as follows:

The copper is received from the smelting works in the form of wire bars, which are approximately fifty-four inches long, with an average diameter of about three and three-fourths inches, and weigh about two hundred pounds each. These are delivered as commercial copper wire bars.

The first operation is to put the bars into what is termed a "continuous furnace," the bars going in at one end of the furnace and taken out at the other. In their passage through they are heated to about 950° Centigrade, at the rate of about two bars per minute.

The heated bars are then put through a series of grooved rolls. Each succeeding groove being smaller, it results in a reduction of the three and three-fourths-inch bar to a diameter of five-sixteenths inches. These are now called rods, and are

taken up on a reel in the form of a coil about thirty inches in diameter. These coils are then taken from the hot-rolling department, and are cold at that time. They are then plunged into a bath of sulphuric acid and water for the purpose of removing whatever oxide has been formed in the hot-rolling operation. After about twenty minutes in this solution, the oxide is removed and the rods are then taken and thoroughly washed with clean water under a high pressure from a hose; after which they are immersed in a vat containing a lubricant of tallow and soap. The rods are now ready for the drawing process.

The rods are substantially drawn on what is termed by wire manufacturers a "continuous wire drawing machine." That is to say, the five-sixteenths-inch rod goes in at one end of the machine, and, after passing through several dies, each one reducing the diameter and hardening the wire, it finally is drawn around a block to the finished size, say .104".

In making this reduction, the copper is reduced in diameter from No. 1 wire gauge to No. 12 wire gauge, or, in technical terms, the wire is "eleven numbers hard." This process gives the wire the greatest amount of tensile strength possible from commercial copper and yet preserves its elasticity. The cost of production is enormously reduced by the new process. Whereas, under the old process, a very skilled workman was required for each single drawing, an attendant is now able to care for several continuous drawing machines that are run at a speed unapproachable by the old method. In the smaller sizes of wire, diamond dies are employed which, in themselves, represent a very considerable investment.

Commercial copper in its soft state has a tensile strength of about 28,000 pounds per square inch, with an elongation of about thirty-six per cent., and by the cold-drawing process above described, the tensile strength is increased by each number drawn, and the elongation is reduced; therefore when the copper wire is drawn eleven numbers hard, it has a tensile strength of about 64,600 pounds per square inch, with an elongation of about one per cent. The wire is then taken from the wire-drawing blocks, so-called, and is carefully inspected for tensile strength, elongation, torsion and conductivity. The inspected wire is then carefully packed by wrapping each coil with burlaps, so that it does not become bruised or damaged in any way by transportation.

The cost of hard drawn copper wire fluctuates with the price of ingot copper, and at present writing is quoted at sixteen cents per pound. The relative cost of copper and iron wire, say of No. 12, is three and three-fourths cents for iron and sixteen cents for copper.

The advantage of copper over iron, besides what is shown in the table herewith, is that it is practically indestructible except from mechanical injury, and, if it receives mechanical injury, it can be made over into new wire at a cost of about two cents per pound, while iron, which is subject to rapid deterioration from rust, is worthless when taken down.

The output of hard drawn copper wire has steadily increased from year to year.

The comparative properties of No. 12 N. B. S. gauge copper and iron wire are given in the following tables, this being the size in the largest general use as telephone toll line conductors:

No. 12 N. B. S. Diameter in Mils		Resistance per Wire Mile 68° F. Ohms	Inductance per Pair Mile Milhenries	Effective Resistance per Wire Mile Ohms	Electro Static Capacity per Pair Mile microfarads	Miles equal to 1 Mile Hard Drawn Copper for Telephone Transmission
Soft copper.....	104	5.1	3.66	5.1	8220	1.02
Hard drawn copper.....	104	5.2	3.66	5.2	8220	1.00
Iron B. B.....	104	38.0	18.00	47.0	8220	0.26

No. 12 N. B. S.	Diameter in Mils	Weight per Wire Mile lbs.	Tensile Strength in Pounds	Torsion in 6 inches	Elongation Per cent.
Soft copper.....	104	173	290	50-75	40.
Hard drawn copper.....	104	173	550	25-45	1.
Iron B. B.....	104	153	450	45	18.

These figures represent average commercial conditions. The soft drawn copper wire is assumed to have a conductivity of 99 per cent. of that of pure soft copper, while that of the hard drawn is ninety-seven per cent.

The wires of a pair are supposed to have a separation of twelve inches on centers. In calculating the inductance and effective resistances, a frequency speed ($2\pi n$) of 5,000 has been taken, while assuming a permeability of 100 for the iron wire.

Much of added interest could be written were the writer to disregard the individual trade secrets that must be respected.

The following manufacturers are producing hard drawn copper wire: John A. Roebling's Sons Company, Coe Brass Manufacturing Company, Ansonia Brass and Copper Company, Holmes, Booth and Haydens Company, National Conduit and Cable Company, American Steel and Wire Company, The Waclark Wire Company, Standard Underground Cable Company, American Electrical Works, the Bridgeport Brass Company.

I am indebted to the officers of these companies, and also to Mr. Charles F. Brooker and Dr. Hammond V. Hayes, for valuable assistance in the preparation of this paper.

Pine Orchard, Conn., November 1, 1905.

The testimony of progressive operators is that TELEGRAPH AGE is so thoroughly comprehensive in character as to make it absolutely indispensable to those who would keep informed. Its technical articles are of high practical value. Write for a free sample copy.

F. O. Nourse at Atlanta.

Mr. Frederick O. Nourse, who has recently been appointed general inspector of the southern division of the Western Union Telegraph Company, with headquarters at Atlanta, Ga., was advanced to that position from the management



FREDERICK O. NOURSE.

General Inspector, Southern Division, Western Union Telegraph Company.

of the Macon, Ga., office. Mr. Nourse, before going South, three years ago, had been the general traffic chief at the main office in New York, where he was held in the highest esteem both for his ability as a telegraph man and for his personal qualities of mind and heart. On his retirement from telegraph employ, in 1902, his associates in the New York office united in presenting him with a handsome gift, which was accompanied with resolutions of a flattering character.

Mr. Nourse comes of sturdy New England stock, having been born at Littleton, N. H., on October 3, 1859. His entire business life, dating from his seventeenth year, began with country service, continuing in the metropolis and at the South, where he has been well received, and where he has won golden opinions. He is a well-informed man, possessing an intimate acquaintance with the telegraph, and he will bring to his new post a dignified, capable and pleasing personality.

Preserve Your Papers.

By taking a little trouble, when TELEGRAPH AGE first comes to hand, it may be preserved to form a permanent and valuable addition to the reading matter of a kind which all telegraphers should be supplied. We furnish a neat and attractive cloth board binder, which will be sent by mail, prepaid, for \$1.00. It has good, strong covers, on which the name TELEGRAPH AGE is stamped in gold, and means by which each issue may be securely held as in a bound book. One binder may thus be made serviceable for a number of years, and when successive volumes, as they are completed, are bound in permanent form, the subscriber ultimately finds himself, for a moderate cost, in possession of a most valuable addition to his library, embracing a wide variety of telegraph, electrical and general information, and timely and original illustrations. Save your papers.

Edwin L. Huntley Becomes Postal Manager at Omaha.

Edwin L. Huntley, recently appointed manager of the Postal Telegraph-Cable Company at Omaha, Neb., there succeeding C. O. Fuller, resigned on account of ill health, an announcement made in TELEGRAPH AGE, December 16 last, is a native of Missouri, in which state he was born in 1870, at Clinton. His early life was passed in Ohio, and it was at Ostrander in that state that he began his telegraph career in the railroad service, in 1885, when but a lad of fifteen. Two years later he went to St. Paul, Minn., still continuing in railroad employ, until finally, in 1890, at Sioux City, Ia., he entered the service of the Western Union Telegraph Company as an operator. In 1892, following his marriage at Sioux City, he became identified with the Postal at Omaha, in which city he has since resided. After a brief connection with the main office, his first assignment was with the daily World-Herald of that city. At the same time he became a representative of The United Press. When the latter discontinued its news service in 1897, Mr. Huntley's services were employed in connection with The Associated Press; subsequently he was placed in charge of the Board of Trade office, then newly opened, of that organization. It is from this latter position that he has now been called to the head of the Postal local interests at Omaha. Mr. Huntley owes his appointment to an all-around knowledge and grasp of the telegraph in general, and specifically as it exists in



EDWIN L. HUNTLEY.

The new Postal Manager at Omaha, Neb.

Omaha. He has been a careful student, a close observer, faithful in positions of responsibility, and his selection to so important an office, which is as well an overland cable repeating station, is based solely on the personal worth of the appointee.

Changes in the Telegraph.

In bringing to a close the series of articles that have run through several issues of *Telegraph Age*, under the caption of "Changes in the Telegraph," the story of which has been restricted exclusively to the mention of those whose pictures appeared in *Telegraphers of To-day*, that standard work brought out by the publisher of this paper in 1894, and who have since climbed the ladder of advancement in the telegraph service, who have gone into other occupations, or who have died and so passed from this earthly sphere, a long recital, extended far beyond the limit first intended, we are pleased to note the widespread interest that has been aroused by the narration. This is shown by the numerous calls that have been received for extra copies of the paper containing the portrayal, some from across the Atlantic, for the publication has made mention and brought into view many who practically had been lost sight of by their old-time friends and associates. There has been a delight as well as a pathos in preparing these sketches, for the changes of but a decade are many, a feeling which has been shared alike by hundreds of telegraphers who have closely followed the written account.

The press has always had in its service some of the brightest of telegraphers. This branch of telegraphic employment has ever served as an exceptionally fine school and training ground for ambitious men, and from the ranks of those so employed many exceptionally able men have graduated. Some have won fame in the editorial chair and in other phases of literary work; others have gone into different fields of endeavor, while all such, as a rule, have pressed successfully onward.

In 1894 Walter P. Phillips was the general manager of *The United Press*, New York, a concern which, after a brilliant record, went out of business in 1897, for reasons not necessary to record at this time. In his telegraphic days Mr. Phillips, who is of New England birth, was a famous operator, speedy and accurate, and for the achievement of receiving and copying 2,731 words in a single hour's time, in 1868, when twenty-two years of age, he was presented by Professor Morse with a gold pencil and penholder, suitably inscribed. Mr. Phillips, who is a graceful writer, has contributed much to the current literature of the day. He is now identified with the *Columbia Phonograph Company*, of New York, manufacturers of the graphophone.

The *United Press* claimed some very clever men in its management. Albert L. Suesman, also a New Englander, a boyhood friend of Mr. Phillips, who taught him telegraphy, was the general Western manager of *The United Press*, with headquarters at Chicago. He is now in the telephone service at Kansas City, Mo. P. V. De Graw, a native of Princeton, N. J., now nearing his fifty-third year, was the general Southern manager of *The United Press* at Washington, D. C. His newspaper work as correspondent at

the National Capital has been of a highly creditable character. It was the stepping-stone to acquiring wide public acquaintance, a fact which finally caused his selection to the office of Fourth Assistant Postmaster General. Frederick N. Bassett, also a New Englander, almost identically of Mr. De Graw's age, was the general Eastern manager of *The United Press* at New York. His telegraphic abilities and long newspaper experience have proved a valuable asset in his career. He is considered an excellent judge of newspaper service, and is now the North Eastern manager of *The Publishers' Press Association*, at Boston, Mass. Charles H. H. Cottrell, who filled the position of cashier of *The United Press* at New York, is a native of Cleveland, and in addition to a long apprenticeship in both the railroad and commercial telegraph service, once held a position in the London office of *The Associated Press*. He has an excellent reputation as being one of the best telegraphers in this country, and is now in the employ of the *Western Union Telegraph Company*, New Orleans. Robert W. Martin, who hails from Dutchess County, New York, was cable editor of *The United Press* in 1894. He was a military telegrapher during the latter part of the Civil War. He is a man of large telegraph experience, and ranks among the best as an all-around expert operator. He is now a member of the operating staff of the *Western Union Telegraph Company*, New York. Fred Catlin, of the staff of *The United Press* ten years ago, a Pennsylvanian, and a brilliant operator, favorably known by his former connection with telegraphic tournaments held in New York, is still located in the metropolis, where he is doing excellent telegraphic work for a Wall Street banking house. Another well-known member of *The United Press* staff was John W. McLaren, one of the best of the Canadian contingent of operators in this country, who has a long record to his credit of varied and excellent work performed, is now a member of the telegraph staff of the *New York Herald*. Frederic G. Mason, who was the auditor of *The United Press*, a native of Illinois, and who is now in his forty-sixth year, a son of S. C. Mason, storekeeper of the *Western Union Telegraph Company* at Chicago, and a forty-niner of the telegraph, now occupies an important position in the *Fidelity and Casualty Company*, New York. George W. Conkling, who represented *The United Press* at Newark, N. J., being at that time but twenty-three years of age, has since developed into one of the foremost telegraphers in the United States. He is possessed of remarkable skill and speed, and has received the first prize in almost every telegraph tournament in which he has taken part. He is now employed in a Wall Street banking house.

Another well-known old-timer and brilliant telegrapher, who, at the time *Telegraphers of To-day* made its appearance, was assistant superintendent of leased wires of *The Associated Press*, New York, E. W. H. Cogley. A native of Pennsylv-

vania, where he was born just sixty years ago, he has now retired from active telegraph service, and is living quietly in his native town of Lewistown.

Among those prominently identified with the press service at the time before stated, and who have since died, may be mentioned Albert S. Ayres, assistant day manager of The United Press, well known as "Patsy" Ayres, and one of the phenomenal operators of his day. He died at Cincinnati, May 18, 1905, aged fifty-five years. William G. Jones, of The United Press staff, who came from Parkersburg, Pa., where he was born in 1850, had an extended telegraph experience. In the Centennial year he was agent of The Associated Press at Philadelphia. He died September 1, 1904. Roderick H. Weiny, a native of Keokuk, Iowa, was the electrician of The United Press in 1894. He was an accomplished telegrapher, and a well-known inventor of telegraphic apparatus. The Weiny-Phillips repeater was the joint production of Mr. Weiny and W. P. Phillips. He died at his home in Glen Ridge, N. J., October 31, 1903, aged forty-five years. W. H. C. Hargrave, a member of the executive force of The United Press, prior to which for many years he was manager at Philadelphia of the bureau of The New York Associated Press, came from St. Louis. He died September 12, 1894, aged forty-one years. Another death is that of Thomas H. Reilly, which occurred February 28, 1901, just after he attained his fifty-first year. In 1894 Mr. Reilly was day editor in New York of the New England Associated Press. He was a well-informed man, who had seen a good deal of the world, and his press and general telegraphic knowledge was extensive.

Among other than press operators who have died since Telegraphers of To-day was issued is S. P. Peabody, of Columbus, Ohio, who passed away February 14, 1899. He held a high official position with the Baltimore and Ohio Railroad Company. He was an old-time telegrapher. He served in the United States Military Telegraph Corps during the Civil War, where he saw much active service, rendering an excellent account of himself. Joseph B. Stearns, who was a well-known individuality in telegraph circles, acquired distinction and wealth by the invention of the duplex system of telegraphy, the royalties on which amounted to immense sums. A native of Weld, Me., where he was born February 28, 1831, he died July 4, 1895.

Early in the publication of these sketches reference was made to J. D. Flynn, of Pittsburg, Pa., a former superintendent at that point of the Western Union Telegraph Company. Mr. Flynn died, after a very brief illness, on December 25, 1905, as recorded in our issue of January 1. Born on Christmas, 1846, his death occurred on the recurrence of that day fifty-nine years later. It is recorded of Mr. Flynn that during his service as a military telegrapher in the Civil War, he was captured by the enemy and placed in a

Southern prison. His youthful appearance was such—for he was but fifteen years of age—as to excite the sympathy of his guards, who purposely afforded the young prisoner an opportunity to escape.

John Gavey on the Telegraph, Telephone, Etc.

(Concluded from page 16, issue of January 1.)

Wireless telegraphy, so called, has attracted a great deal of intermittent attention for many years past. The various possible methods of communication between two localities not directly connected by wire may be divided under five heads: (1) Leakage across the earth or water between two parallel wires erected on opposite sides of a position which has to be bridged. (2) Electro-magnetic induction between coils placed vertically or horizontally. (3) The combination of the two above systems by the erection of two parallel overhead wires connected to earth at their extremities. (4) Electrostatic effects from vertical conductors. (5) The Hertzian system.

Many attempts have been made to establish communication across rivers, arms of the sea, etc., by the first method, and they have met with varying success, but the system is one the application of which has a limited scope.

The second method has but a limited range; it has only been rendered possible by the use of telephones; but inasmuch as the effective energy available for signals diminishes as the cube of the distance between the coils, the limit beyond which no signals can be received is very rapidly reached.

The third method, which, prior to the invention of the Hertzian method, was fully investigated by the Post Office, has met with a certain measure of success, and at the present time there are two installations still at work in England. One of them connects Rathlin Island with the mainland at Ballycastle, the parallel wires being at an average distance of eight miles apart. The second instance is an installation establishing communication between the Skerries, a series of rocky islets off the coast of Holyhead, with the telegraphic service on Holyhead Island itself. The parallel wires are at an average distance of three miles apart. The latter installation is worked telephonically; that is, the wires are fitted with telephone transmitters and receivers, and telephonic speech is actually transmitted from wire to wire.

The fourth system of communication, by purely electrostatic effects, without the emission of free waves, has not been developed on a practical scale.

The fifth, or Hertzian system, has created world-wide interest, and its development in the course of the last few years has been very marked. As is well known, the method is based on the classical researches of Hertz; it was made possible in the first place by the original inventions of the coherer by Branley, improved later by

Lodge, and finally developed into a practical system by Marconi.

It may be of advantage to briefly review the gradual development of the art from the date of Marconi's early work. It will, no doubt, be remembered that after a period of experiments, first in Italy, then in England, a crucial trial was made in the year 1896, under the auspices of the Post Office, across the Bristol Channel, from Lavernock Point, first to the island of Flatholm, and then to Breamdown, near Weston-super-Mare. At that period, what has by some been termed the "whip crack method" only had been tried; that is to say, a powerful spark coil was connected, one terminal to the vertical conductor, the other to the earth. This arrangement emits a very powerful impulse, which is damped down almost immediately, and it is probably the first single impulse alone which affects the receiver at a distance. Elementary attempts at tuning were made by various experimenters during this period, but the art was not sufficiently developed to admit of any really useful results being obtained. The coherers were probably far too sensitive, and the difficulty experienced in the early days was rather due to their not decohering than their failing to respond to the electrical waves. In course of time this difficulty was remedied by the use of an oscillating transformer in the receiving circuit which admitted of the use of less sensitive coherers, and excellent results were obtained; but owing to the fact that every receiver within a certain definite range of a given transmitting apparatus responded to each impulse, and all receivers were affected by all transmitters within range, it appeared at first as though Marconi's attempt to increase the effective limit of his apparatus would tend to restrict rather than to extend the use of the system. He and others interested in wireless telegraphy, therefore turned their attention to the establishment of syntony between the transmitting and the receiving apparatus, and a marked degree of success has attended their efforts. This syntony is usually effected by connecting one or more closed oscillating circuits to the source of energy, and coupling these either direct or through an oscillating transformer with the vertical antennae, the closed oscillating circuit and the vertical antennae being in unison; that is, having the same frequency. A closed oscillating circuit includes a capacity and inductance, and therefore for each primary impulse a train of waves is generated. The first portion of the wave has not such an amplitude as when the whip crack method is used, but this is more than counterbalanced by the effect of the long train of oscillations, which results in restricting to a great extent the visible effect to receivers tuned in harmony, other receivers not so tuned not responding when a certain critical distance is passed. In the next place, by a judicious combination of oscillating circuits with antennae of suitable capacity, the amount of energy

that can be utilized for the transmission of signals may be increased from the small limits imposed when an ordinary induction coil is used to practically any given amount—an utter impossibility with the original method of working. Of course, where a very powerful exciting system is in use, the radiating surface must be increased proportionately, and the well-known method of multiple antennae has been designed to achieve this end. At the receiving station the tuning is effected by the addition either of inductance or of capacity, the receiving installation being brought into as perfect syntony with the transmitter as is possible. In addition to this, special devices have been introduced in the receiving circuit for the elimination of waves of other periodicities so that even whip crack transmission can to a great extent be eliminated. The effect of having the transmitting and the receiving apparatus in harmony was shown in an admirable manner by the Post Office experiments recently carried out and described by Messrs. Duddell and Taylor, which gave graphical measurements of the energy received under both conditions.

The receiving apparatus has undergone many modifications since the original filings coherer was invented. There is, for example, the single-point contact, consisting of a pointed carbon lightly resting on a slightly oxidized steel surface; the Brown radioscope, consisting of a lead electrode resting lightly on a surface of peroxide of lead; the Lodge-Muirhead revolving disc, touching lightly on a mercury surface; the Schaffer, so-called anti-coherer, consisting of a fine razor slit across a silvered glass surface; the Italian Navy coherer, in which one or more globules of mercury are enclosed between carbon and steel contacts—all of which are dependent for their action on imperfect contacts; the Bolometer and electrolytic methods claimed by different inventors; and finally, Marconi's electromagnetic receiver. Many of these have been associated with variations in the original method of combining the different electrical elements of each circuit, and have been denominated "systems." I will not, however, enter the thorny path of attempted discrimination between those that may be considered as systems or those that can only be described as methods.

A great deal has been said by rival inventors as to the possibilities of wireless telegraphy, and some exaggerated claims have been made on their behalf which have led to counter statements by some interested in other methods of communication. While on the one hand it may be fairly assumed that wireless telegraphy is not, under any circumstances, likely to supplant, or even to compete seriously with inland methods of intercommunication, there is no doubt that there is a very distinct and important sphere of utility awaiting its further development. For intercommunication between ship and shore and ship and ship, much has been done, although much remains to be done. For intercommunication be-

tween neighboring coasts there is also a possible future, but this depends almost wholly on the further development of the methods of syntony or tuning. There appears to be no doubt that in cases in which the wave lengths used on two systems differ to a considerable extent a very marked degree of success has been obtained in the avoidance of mutual interference. Where the wave-lengths, however, are not very widely apart in frequency there is in each case a definite range within which interference arises, and simultaneous working is impossible. That the tuning methods will be improved I think there can be very little doubt. The progress that has been made between the year 1896, when it took a week to receive a few elementary signals over a distance of nine miles, and the present time, when such remarkable results have actually been obtained, is so great that it does not imply the possession of an unduly sanguine disposition if one ventures to predict further improvements, which may be expected to increase the freedom from mutual interference, the speed, and the reliability of this method of communication. It does not appear to be very probable that it will seriously compete with the highly developed cable communication in the near future, although it may in many instances supplement that service.

"Farmer" Lawton's Indian Romance Like Fiction Page.

The building of the Denver and Rio Grande Railroad into Durango, Colo., twenty-five years ago, was the great event of the day, says the Denver Republican. For weeks after southwestern Coloradoans talked of but little else. Gradually it and other things that transpired about that time were forgotten, and the wideawake people of the San Juan set to work developing that wonderful rich section.

The Southern Utes, whose reservation had been penetrated by the new road, were inclined to be ugly. They had no more use for a railroad than they have now for automobiles, and it required much persuasion upon the part of the railroad officials to convince the redmen that the road was a benefactor to them.

Obstacles were not easily overcome, the Indians could not be made to understand the importance of the slender little telegraph wires along the railroad's right of way, and were continually borrowing pieces of it for arrow points and to strengthen their bows. John J. Harris, state senator, at present a merchant and banker at Dolores, Colo., was then superintendent of telegraph for the Rio Grande. Mr. Harris is considered one of Colorado's able law-makers, but he was no match for the cunning Utes, and was about to throw up his job when "Old Farmer" Lawton, of the Western Union Telegraph Company, of Denver, went to his relief.

Together they hurried to Ignacio's domain, the "Old Farmer" taking a physician's high voltage

galvanic battery with him. A short circuit was made of one of the wires between two poles, and fifty or sixty of the more mischievous Utes were invited to grasp the wire with their naked hands while Mr. Harris would explain its simple but very important duties.

The first shock threw them all on their knees, and, of course, they were unable to let loose. As the current was increased, and their antics became more alarming, the rest of the tribe ran away, leaving them to their fate.

Harris, who was not the gentle, kind-hearted senator that he is known to-day, wanted to get an ax and behead the whole bunch as an example to others that might have a desire to interrupt the telegraph business of a big railroad, but the "Old Farmer" said "No," and continued to pour the electric fluid into the Indians until he thought they had enough to last them a while. When the current was gradually turned off, and after they had the kinks out of their badly drawn up hands and arms, the Indians began to dance around their captors and call them "heap big medicine men."

One old buck who had suffered with rheumatism for years felt so relieved he insisted on giving the boys his best blanket and one of his prettiest daughters.

As both Lawton and Harris were engaged to their present wives, they began to think they were good subjects for a breach of promise suit, or something worse, when Mr. Harris got out of his part of it by taking the blanket and thanking the old chief.

The dusky maiden then took her stand by the "Old Farmer," and wherever he moved she was at his feet ready to do his bidding. Finally he led the trembling girl to her father's wigwam, and after kissing her beautiful brown (but somewhat dirty) hand, told her that she would be much better off with her papa. But that was not Indian custom, and did not go either with the girl or her dad. She ever lived a single life after until, last week, while gathering wood, she fell over a cliff and broke her neck, going to the happy hunting grounds believing that she was the "Old Farmer's" lawful squaw.

This story probably would have been buried with her had not Mr. Harris repented for taking advantage of the "Old Farmer" in the early days. On Christmas he sent him the old blanket with the following note attached:

"My Dear George: I hope this will not revive bygone memories, but wishing to clear your conscience of a dual life, I now send you the most valuable blanket ever woven by a squaw, and I trust that you will receive as much real benefit and comfort out of it for the next twenty-five years as I have for the past quarter of a century. Believe me, your true friend, "J. J. H."

The new classified catalogue of books on the telegraph, telephone, wireless telegraphy, electricity, etc., published in TELEGRAPH AGE, may be had for the asking.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

ST. LOUIS, WESTERN UNION.

Mr. Paul Kainey, after a two weeks' vacation passed at Pulaski, Tenn., has returned to work.

Mr. R. C. Cowardin, who worked the Chicago and Dallas bonus wire, has resigned to accept the position as operator with Barnhart, Frazier and Co., New York.

Mr. J. L. White, formerly manager of the Baton Rouge, La., office, has returned here to work.

J. J. McCruden, who recently worked the Dallas bonus wire, is now working the Little Rock wire, Mr. A. J. Moorehead succeeding him.

Among the chiefs who received Christmas gifts from the office force, were Messrs. C. W. Henry, J. H. Korner and Col. M. D. Crain.

The Magnetic Dancing Club, composed of telegraphers, will entertain their friends at Louisiana Hall, on January 18. Refreshments will be served and telegraphic souvenirs will be presented to each one attending.

CHICAGO, WESTERN UNION.

J. S. McCurdy was presented with a beautiful gold watch at Christmas time by members of the Masonic Lodge.

Miss Lena Grower and Mr. Clay, both of this office, were married December 16.

Charles White, of the St. Paul division, has gone South for a few weeks, in the hope of benefiting his health. During his absence the assistant division chief will be in charge, assisted by John Foster.

Dell Jones and wife are with us once again. Mrs. Jones is working at the buzzer in the Metropolitan department.

Division Chief Frank M. Crittenden was elected a delegate to the Cook County cabinet, also to the secretaryship of Morse Council, No. 347, National Union, at their recent annual meeting held here. Mr. Crittenden has been a hard worker for the National Union for several years.

Henry Jahn, who for some time has been almost blind, has so far regained his sight as to be able to return to work.

Miss Alma Guy, formerly of this office, but who now resides in New York, and who some years ago became totally blind from some disease contracted while in the performance of charitable

work, was lately made the recipient of a joint letter from members of this staff, who hold her in affectionate remembrance. She has almost wholly recovered the sight of one eye and was able to write a letter in response.

Mr. Evan T. Jones has been appointed Western wire chief nights, vice J. F. Stickel, resigned.

Mr. Evan P. Jones has been appointed assistant night loop chief, vice Fred Letourneau, appointed to late night force.

Manager Paris L. Mounts, of the Terre Haute, Ind., office, was a caller here recently. Mr. Mounts is one of the old timers in the telegraph business, having been manager at Pana, Ill., Richmond, Ind., and various other points in the Indianapolis district.

SACRAMENTO, CAL., WESTERN UNION.

This office is undergoing some much needed repairs, and a series of fourteen dynamos are being installed under the supervision of H. S. Converse, of San Francisco, electrician for the Pacific Coast, to replace some 2,400 cells of gravity battery. The potential electric motive force varies from 55 to 350 volts. The highest voltage will be used for the overland and Portland, Oregon, wires.

The personnel of the office consists of G. W. Waterbury, manager; A. Culton, chief operator; J. F. Allen, assistant chief; M. Nelis, night chief, and R. Buell, W. L. Fingland, S. P. Aubry, P. R. Moore, J. W. Heiss, J. W. Goenner, operators at the main office. At the branch offices, D. Bevan is at the State capitol building, Miss E. T. Allen at the Gold Eagle Hotel, and E. Sandal at the Southern Pacific depot. Miss Annie Bovyer is bookkeeper; Miss Carolyn Moncur and Mr. E. C. Williamson, delivery clerks; Miss McBurney and J. Newman, check clerks. Mr. C. H. Brookman looks after the battery and Mr. William Walsh the clock circuits.

NEW YORK.

POSTAL TELEGRAPH-CABLE COMPANY.

EXECUTIVE OFFICES.

Mr. Isaac Smith, superintendent of tariff, has arranged the 1906 book showing the revised tariff, list of offices and instructions and rules of this company. The work bears evidence of much care on the part of its compiler, and its growth in bulk from year to year is the best evidence of the steady expansion and growth of this company. The present volume embraces over 600 pages, and is full of valuable information. A series of maps showing the submarine cables and land telegraph connections of the world indicates how thoroughly this company is enabled to reach all portions of the globe.

IN THE OPERATING DEPARTMENT.

Mr. C. C. Errickson, of this office, has been transferred to New Brunswick, N. J., as manager at that point, relieving Mr. Harry Witt, who returns to this office.

Mrs. B. C. Lamplugh has been confined to her home for the past three weeks, owing to illness.

Frank Yule, of the Philadelphia division, has secured a leave of absence, which he will spend at his home in Chicago, Ill.

Miss Marie Hassinger, formerly with this company at Newburg, N. Y., is among the arrivals and has been assigned to the city division.

Miss Katherine Erb and Miss Ethel Ward have been promoted from the check to the operating force.

Mr. H. L. Linder is looking out for the Southern traffic and Washington during the session of Congress.

Mr. George Hinman is in charge of all direct pony wires to the broker district from the main office.

Mr. E. F. Murray has been assigned to the "Globe" newspaper.

P. J. Holland, of the Cotton Exchange, has been transferred to the main office.

WESTERN UNION TELEGRAPH COMPANY, EXECUTIVE OFFICES.

Mr. John C. Barclay, assistant general manager and electrical engineer, and Mr. Charles H. Bristol, general superintendent of construction of the company, are making a Southern trip in the interests of the service. They will visit, accompanied by the various district and general superintendents through whose territory they may pass, Atlanta, Jacksonville, New Orleans, Galveston, Memphis, Hot Springs, and other large telegraph centers.

The rearrangement of offices on the sixth floor enables Mr. Barclay to secure a much needed additional office. The present order of rooms along this corridor gives C. H. Bristol, the general superintendent of construction, hitherto located on the second floor, a room adjoining that of Mr. Barclay, next coming that of Thomas F. Clark, vice-president, beyond which are two rooms devoted to the necessities of G. W. E. Atkins, superintendent of contracts, the remaining large space, as heretofore, being occupied by J. B. Van Every, vice-president and auditor.

Mr. Belvidere Brooks, general superintendent of the Eastern division, has recently moved his offices from the sixth to the fifth floor of the building. The new quarters are commodious, well lighted, ventilated and suitably decorated, and in every way adapted to the special requirements of the service.

The construction department of the Eastern division, leased wire, time service and other departments are now so grouped together as to greatly facilitate the work of the division.

Mr. Frank J. Scherrer, accompanied by his wife and daughter, spent the new year holidays with relatives in Chicago.

The tariff book for 1906 has made its appearance. As usual much care has been expended in its make-up by Mr. William Holmes, superintendent of tariffs, under whose direction the work is done, and those for whom it is intended will find the volume of great reference value. It will be noticed, following out the initiative of the preceding issue, that the money transfer pages are printed on colored paper, a convenience of arrangement that will be appreciated. The Alaskan map has been amplified and brought up to date, while a new cable map has been intro-

duced showing Western terminals of the transatlantic cables by which this company routes its messages to Europe and beyond.

It has been suggested that the name of Dey street be changed to that of Electric street. The proposition is based on the fact that at its starting point on Broadway the Western Union Telegraph Company is located, while diagonally across the way, nearer to Church street, the telephone company has its headquarters. Besides these great corporations, representing millions of dollars, several electrical supply houses, such as W. R. Ostrander and Company, the Manhattan Electrical Supply Company and others, abut on this thoroughfare, which also shelters many electrical engineering concerns. In fact, the electrical interests appear to be largely represented on this street, while the immediate neighborhood furnishes storeroom for many of the largest electrical concerns in the city. It seems fitting that the name "Electric," which stands for one of the greatest and most rapidly growing industries in this country, should receive recognition by the application of the name to the one street in the city most appropriate to receive it.

IN THE OPERATING DEPARTMENT.

Morse Lodge, No. 171, Order of Columbian Knights, composed largely of telegraph men, held their annual installation ceremony January 9. It was one of the most enthusiastic fraternal gatherings ever witnessed by the members, most of whom are also members of the Royal Arcanum and other societies. J. P. Vanderschot of the supply department was installed as president and made an address. The next meeting will be held on the second Monday in February, and invitations are extended to all members of the craft to be present.

Mr. W. H. Murphy, one of the best known operators in the Central Cable office, a few nights ago was attacked and knocked down in Brooklyn, his skull being fractured by the blow. Mr. Murphy's condition was quite serious, but he is now convalescing. He has worked the Galveston circuit for fifteen years, and so popular was he on the wire that his associates in the Texas metropolis, on learning of his misfortune, at once sent word to New York to the effect that they desired to be counted in making Mr. Murphy's period of convalescence as pleasant and comfortable as possible.

Mr. J. D. Hinnant, one of the most expert telegraphers in New York, resigned his position as clerk in charge with the Anglo-American Telegraph Company's Stock Exchange office, and has entered the service of the Cable office at 16 Broad street.

William Lynch and F. D. Byrne, of the Duxbury, Mass., cable station, spent the holidays with friends in this city.

A daughter was born to Mr. J. F. Nathan of Manager Hamblin's office, on January 8.

Henry C. Butt died December 17, last, at his home in Brooklyn. For many years he was connected with the Cotton Exchange office of this company.

M. F. Gaffney, aged forty-two years, who for twenty-seven years had held responsible positions in the Commercial News Department, died of apoplexy on January 3. His entire business career was spent in the service of the company. His funeral, which occurred on the fifth inst., was largely attended by his office associates.

OTHER NEW YORK ITEMS.

Mr. G. W. Hickey, of New York, recently renewed his subscription to *Telegraph Age*, which now covers a period of twenty-four years, he being one of the first to take the paper. It may not be generally known that Mr. Hickey is a brother of the late Matthew E. Hickey, who was so well and favorably known in telegraph circles in New York city a quarter of a century ago. He was noted for his dry wit, his fund of stories, and for the practical jokes he was wont to play upon his associates at the key. He was one of those in the employ of the Western Union Telegraph Company in 1878 during the yellow fever epidemic, who volunteered to go South when such action meant practically the exposure to almost certain death. He served his company faithfully at Chattanooga and at Memphis during the prevalence of the dread disease at those places. He died in 1893. Another brother, Mr. F. J. Hickey, is now the general agent of the Wells Fargo Express Company in New York City, a former operator and a member of the Old Time Telegraphers' and Historical Association.

The annual ball of the Walla Walla Social Club, which is composed of telegraphers, will take place at Majestic Hall, 125 East 125th street, on Friday evening, February 2. Tickets or information may be obtained from J. P. McGovern of the Harlem office, East 125th street, of the Western Union Telegraph Company.

The annual meeting of the Magnetic Club was held on January 11, in the Western Union building, 195 Broadway. The nominating committee, consisting of T. L. Cuyler, Jr., F. J. Scherrer, and M. R. Cockey, presented the following ticket, which was unanimously adopted, and the gentlemen named duly elected:

President, Col. Albert B. Chandler; first vice-president, Marston R. Cockey; second vice-president, George H. Usher; third vice-president, B. M. Downs; fourth vice-president, D. W. McAneny; secretary, F. J. Scherrer; treasurer, R. J. Murphy. For governors to serve two years: Gardner Irving, T. E. Fleming, T. L. Cuyler, Jr., and E. M. Mulford.

Telegraph Operators' Signs.

Telegraph operators always have personal signs which they place on all messages they send or receive. Usually they use two of their initials or take two letters from their names. For instance, James Black will probably use "J. B." as his sign. In many cases, however, they choose their signs in peculiar ways.

"We once had a man working here who signed

'K E' because he had taken the Keeley cure," said a Kansas City chief operator recently. "He afterward went back to drinking and then used 'B Z,' deriving it from 'booze.' Another fellow signed 'P S' because he used to say he received a poor salary.

"A woman operator we had here used to sign 'H K,' her initials, until one day her beau jilted her and married another girl. After that she signed 'B H,' which, we understood, meant 'broken heart.'

"In an Eastern office where I once worked there was a hoodoo sign. It was 'K Q.' The first man who used it there was killed by a train; the next one went crazy and the third died of typhoid fever. After that nobody in the office dared use the hoodoo sign. The story about its being a 'jonah' traveled over the country, and to-day you'll find very few operators signing 'K Q.'"—Kansas City Times.

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of *TELEGRAPH AGE*, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

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The city of Toronto is the second largest city of Canada, having now a population of 265,000. Situated on Lake Ontario, it has a delightful climate, and is less than an eighteen hours' journey from either Quebec, New York or Chicago, and only a night's ride from Montreal or Ottawa.

In Toronto are located the general offices of the Great North Western Telegraph Company. It is also one of the most important relay offices of the company, connecting with the large number of offices in Ontario, as well as by direct wire service with Montreal, Winnipeg, and through its exclusive connection with the Western Union Telegraph Company the larger cities of the United States.

The company, in addition to a large number of branch offices, operates an extensive ticker service for both New York markets and the local exchanges of Toronto and Montreal. In Toronto are located the head offices of a number of the larger Canadian banks, one of which is now engaged in erecting a fifteen-story office building for its home.

Toronto, also, has one of the most extensive street railway systems on the continent, and boasts of the most modern hotel in Canada, costing upward of one million dollars.

North of Toronto are the Muskoka Lakes, famous as a summer resort, and reached by the Grand Trunk Railway and the Great North Western Telegraph Company.

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Book Notices.

A novel production in book making is the volume written by Frank P. Sibley, entitled "All by Wire," described as "a telegraphic explanation of a telepathic union of hearts." It is made up of a numerous set of telegrams printed on fac-simile Postal and Western Union telegraph blanks, the whole ingeniously woven into a story, the reading of which will excite interest and mirth. The preface reads, "Love telegrams need no diagrams," while the dramatis personae are given under the head of "The Wire Workers."

Mr. George Evans of the German-Atlantic Cable Company, Cologne, Germany, has issued an international hand book designed for the use of telegraphers, and printed in three languages—German, French and English. The first part of the book, which altogether embraces 330 pages, is devoted to daily calendar purposes covering the entire year. Then there is a list of telegraph companies with tables giving their respective routes, and other details of information. The volume also contains the important articulated points of the international service regulations adopted at the International Telegraph Conventions. The book also contains numerous references to recent advances that have been made in telegraphy.

Talk Through Telegraph Instruments.

A strange thing in connection with putting in telephones in the Northwestern offices, says the Rochester (Minn.) "Record," is the fact that the telegraph instruments convey the voices just as if they were telephones. Standing in the office of the Northwestern depot you will hear the dots and dashes being clicked off in double quick time, and then from near one busy little relay will emanate a voice sounding above the tireless ticking. You look under the desk and out of the window, but no one is in sight. Put your ear down and locate the voices and you find that they are coming from the telegraph instrument in front of

you. No receiver, no transmitter, no—and still those shrill, piping tones keep up, sounding phantom-like in the distance. It appears that the battery is so strong at division points that the telegraph wires catch the current from the telephone and the magnets in the telegraph instruments act as a transmitter. But it is all very peculiar.—Telephony.

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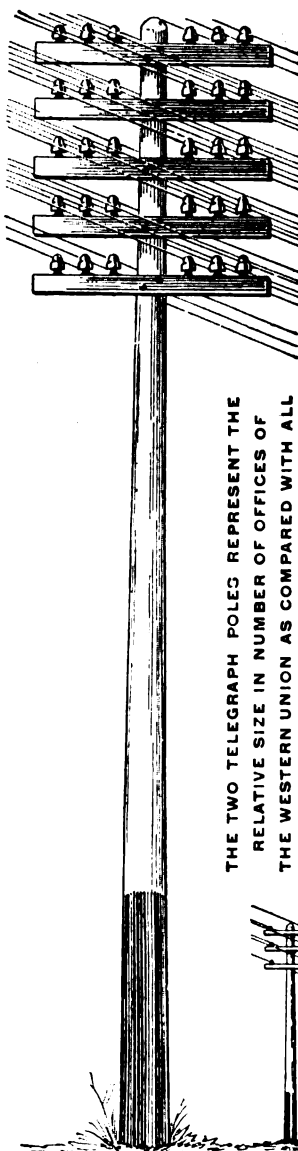
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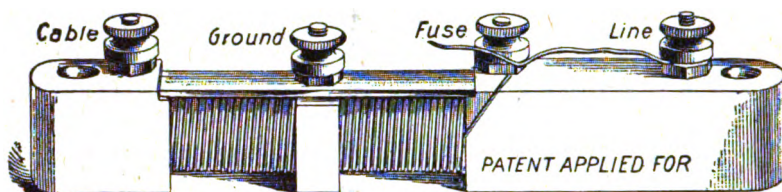
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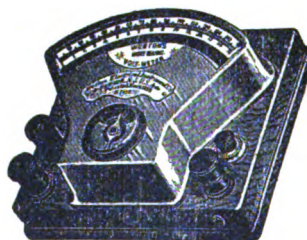
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1883

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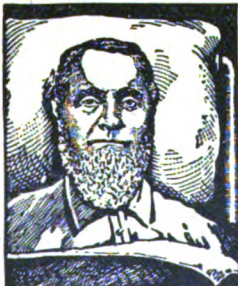
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VOL. XXIV.

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SOME POINTS ON ELECTRICITY. The Dynamo.

In Three Parts.—Part I.

Series, Shunt and Compound Wound.

BY WILLIS H. JONES.

The words "series," "shunt" and "compound," so generally coupled with the name of dynamo, the mechanical generator of electricity, seem to have so perplexed an ambitious but evidently juvenile class of students, as to the actual meaning of those terms and the necessity for constructing the three respective types of machines, that we are asked to give an elementary description of each for their benefit.

It should be understood that the three terms, series, shunt and compound, are used with reference to the windings of the dynamo's armature and field magnet coils only; that is to say, the words indicate, respectively, the manner in which the coils are wound and combined.

SERIES WOUND.

In the diagram on the following page, the three methods of winding are clearly shown. The series winding may be traced in the machine on the left. In this dynamo one end of the external line conductor is connected to one of the brushes rest-

ing on the armature coil of the dynamo. The circuit is then continued through the armature coil to the companion brush, which latter is in turn connected with one end of the coil encircling the field magnet. The other end of this field coil is then connected to the outgoing leg of the main line wire, thus completing the circuit. Because the two coils in the machine, that is, the field and the armature coils, are connected together in such a manner as to constitute one continuous circuit, they are said to be in series. Hence the term series wound dynamo, to indicate that particular method of coil combination.

SHUNT WOUND DYNAMO.

The middle machine in the diagram shows the connections in a shunt wound dynamo. It will be seen that one terminal of the main line circuit and one end of the field magnet coil are both connected to the bottom brush of the machine, while the outgoing main line conductor and the other terminal of the field coil are in like manner both connected with the other brush.

Now, when a current of electricity is generated in the armature of a machine having its coils connected with the brushes in this manner, part of the current will be diverted from the main line and flow through the field coil. A side path of this kind within the machine, or, in other words, the placing of the field and the armature coils thus in multiple, constitutes a shunt wound dynamo.

COMPOUND WOUND DYNAMO.

The figure on the right shows the windings of a compound wound dynamo. It will be noticed that the magnet in this machine is wound with two separate coils instead of one, as is the case with series and ordinary shunt wound machines. One of these coils, shown as dotted lines, is composed of many turns of fine wire, while the companion consists of but a very few turns of coarse wire. The fine gauge coil, as will be observed, is a closed circuit, one terminal being connected to the top brush and the other to the bottom brush. The coarse gauge coil, indicated by heavier marks, is connected in series with the dynamo armature and the main line conductor. The compound machine differs from the shunt wound pattern only by the possession of the additional low wound coil in series with the line and armature. The necessity for different methods of winding and combination of the coils arises from the varying conditions existing in different external circuits.

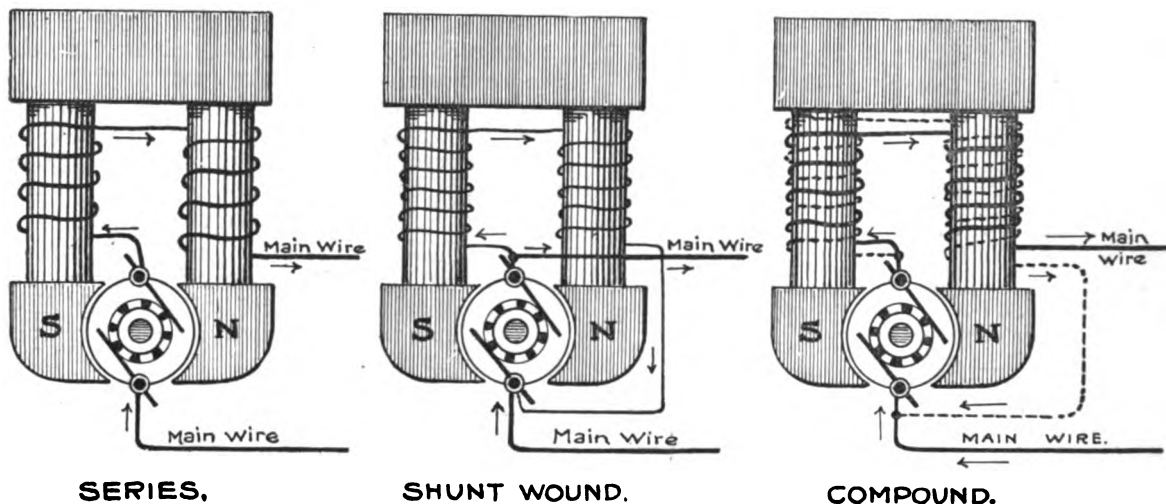
For instance, electric lamps connected in series require that the strength of the current flowing

through the wire shall remain constant in value regardless of frequent alterations in the number of such lamps that may be burning or extinguished at intervals during the night. Hence we must provide for a "constant current" demand. On the other hand, we have circuits which require a constant potential or unvarying value of electromotive force at all times, regardless of the varying quantity or volume of current the lamps may draw from the machine at different periods, as in the case of lamps connected in multiple and in parallel line circuits. We, therefore, must have "constant pressure" machines. "Shunt"

Recent Telegraph Patents.

A patent, No. 809,762, for telautographic and other electric circuits has been issued to George S. Tiffany, of New York, assignor to the Gray National Telautograph Company, New York.

A patent, No. 808,777, for a telegraph key has been granted to Addison E. Peterman, of Repton, Ala. A base to the key having a number of contacts representing different lines is associated with a turntable mounted on the base and carrying a key lever to operate any one of the lines and means carried by the turntable to hold the other lines closed.



Types of Dynamo Windings.

and "compound" dynamos represent the latter types.

In the next installment the manner in which "constant currents" and "constant pressure" are insured by the method of winding will be explained.

(To be continued.)

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, Inc.; June 1 to July 16, Inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Hegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, Inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, Inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power From the Clouds, July 16; Concerning Condensers and Retardator Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16.]

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Business Notice

The Sigel transmitter is another telegraphic sending instrument of the universal keyboard type that has lately been added to those now demanding and receiving attention in the telegraphic world. It is the joint product of Benjyman P. Hayes and Sigel H. Gill, of Topeka, Kan., the patent number being 808,366, issued December 26, 1905, and exhibits in its construction a skillful, ingenious and seemingly effective device for the purpose designed. It is advertised in another column, an announcement to which attention is called, particularly as the patentees desire to establish correspondence with reliable parties who will undertake the manufacture and marketing of the machine.

Personal Mention.

Mr. S. C. Mason, storekeeper of the Western Union Telegraph Company, Chicago, Ill., accompanied by his wife, is spending a vacation on the Pacific Coast.

Mr. William Maver, Jr., the well-known electrical expert, contributed to the Electrical Review a lengthy and interesting article entitled, "A Review of Wireless Telegraphy," which appeared in the issues of January 13 and 20.

Mr. W. S. Logue, general sales agent of the Edison Manufacturing Company, an old time telegrapher and member of the United States Military Telegraph Corps, is confined to his home by sickness.

Mr. J. J. Gorman has resigned as an officer of the Manhattan Electrical Supply Company, New York. It is said that he still retains his interests in the company, but will no longer be actively engaged in conducting the business.

Mr. Richard W. Sears, a members of the well-known firm of Sears, Roebuck and Company, Chicago, which is said to be the largest mail-order concern in the world, was at one time a telegraph operator. The last work performed by Mr. Sears at the key was for the Chi. Milwaukee and St. Paul Railway Company. is a member of the Old Time Telegraphers' and Historical Association.

Mr. W. H. Young, night manager of the Western Union Telegraph Company, Washington, D. C., and president of the Old Time Telegraphers' and Historical Association, who also acts as manager of the Western Union telegraph office at the Capitol during the session of Congress, will this year complete the fiftieth anniversary as manager of the telegraph department in the national legislature. When he took charge he was the only telegraph operator at the Capitol and handled all the press despatches and other messages. To-day this business requires the employment of at least thirty operators. It is stated that the press representatives, among whom Mr. Young is held in high esteem, will take appropriate action in his behalf on the coming anniversary.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. Charles W. Benjamin, manager of the office at Meriden, Conn., has resigned.

Mr. Max D. Clark has been appointed manager at Hillsdale, Mich., vice Robert Seitz, resigned.

Mr. O. G. Fisher, a wire chief at Chicago, has been appointed manager of the American Telephone and Telegraph Company at New Orleans, La.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. F. N. Shoemaker, manager at Grand Island, Neb., has resigned.

Mr. B. C. Ansel has been appointed manager of the newly-opened office at Charleston, W. Va.

Mr. Percy S. Durgin, a broker operator of Biddeford, Me., has been appointed night chief in the Portland office.

Mr. William Casey, a Western Union operator at Tonawanda, N. Y., has been appointed man-

ager of the Postal interests at Lockport, vice Charles Farmer, resigned.

Mr. A. T. Post, of Kingston, N. Y., has been appointed manager at Newburg, N. Y., vice Leroy R. Thompson, who has been made a wire chief at the main office in New York.

Mr. F. L. Wood, manager of the Cotton Exchange office, Augusta, Ga., has been appointed manager of the main office at that point, vice M. H. H. Duvall, resigned to become assistant manager of a brokerage concern.

Mr. Charles E. Davies, formerly an operator in the Helena, Mont. Western Union office, has been appointed chief operator of the Great Northwestern telegraph office at Ottawa, Ont.

Obituary.

Frank Corcoran, aged thirty-two years, a telegraph operator at Athol, Mass., died January 16.

Frederick J. Skerritt, well known in Postal and broker circles, died of typhoid fever in Philadelphia, Pa., on January 25.

George S. Hoyt, formerly manager of the Western Union Telegraph Company at New Bedford, Mass., died at Shannock, R. I., on January 19.

John Kelly, aged fifty-eight years, for many years manager of the Western Union Telegraph Company at Oneida, N. Y., died at Albany on January 5.

George F. Lang, aged thirty-five years, a telegraph operator employed in branch and broker offices in New York, died of pneumonia on January 16, at his home in Brooklyn.

Marguerite L. Clark, aged two years, the youngest daughter of Captain Thomas F. Clark, chief operator of the Western Union Telegraph Company at Boston, died January 15.

"Jake" Curtis, formerly the telegraph operator and latterly the telephone operator at Bellevue Hospital, New York, covering altogether a period of more than thirty years' service, died in that institution on January 11.

Elijah L. Bugbee, aged fifty-seven years, a well-known telegrapher and electrician at Washington, D. C., died in that city, January 15. At the time of his death he held the position of repeater chief and assistant wire chief, nights, at the main office of the Western Union Telegraph Company, and during the day was in charge of the Publishers' Press leased wire at the Capitol. Mr. Bugbee, who was a native of Connecticut, went to Washington from Boston in 1872, his first service being with the Franklin Telegraph Company. In 1877 he became manager of the Atlantic and Pacific Telegraph Company and in 1880 was made manager of the Baltimore and Ohio and American Union Telegraph companies. In 1881 he entered the employ of the Western

Union as assistant chief operator. July 1, 1891, he was appointed superintendent of telegraph lines in the Weather Bureau, an office he held until June 30, 1893, subsequently returning to the Western Union employ. Mr. Bugbee was a man of high character, generally esteemed, and his funeral was numerously attended by telegraph men and others.

The Submarine Cable.

The French war cruiser "D'Entrecasteaux" sailed recently from Toulon to make the preliminary surveys, etc., for the French Tamatave-Réunion-Maurice telegraph cable.

W. H. Grant, of the Commercial Pacific Cable Company's Manila office, arrived a few days ago at San Francisco. He will be attached to the staff of the company at that point.

The Commercial Pacific Cable Company's repair steamer, "Restorer," stationed at Honolulu, arrived at San Francisco several days ago, to go in dry dock for overhauling and repairs.

A recent Madrid despatch states that the Spanish government is inviting tenders for a new cable from Cadiz to Teneriffe. The competition is open to the world. The firm offering the best guarantees will be chosen. The conditions have not been settled finally.

It has been learned that at the instance of President Castro the municipal authorities have seized the cable offices at La Guayra, the principal port of Venezuela. This is the cause of the interrupted communication with Venezuela. Under the present circumstances all despatches must be sent to Trinidad, thence to La Guayra by water. This process takes about three days longer than by the cable route.

The recent laying of cables in the Far East, which the Germans claim as a brilliant success for the makers and layers of the cables, has so frequently been referred to that it is now only necessary to mention the depths which were encountered. It is stated that the Commercial Pacific cable in places was laid in 1903 at a depth of nearly four miles, but this record was beaten by the Menado-Yap-Guam cable, which was laid by the Stephen in the spring of 1905 in depths reaching over four and one-half miles. The Shanghai-Yap cable offered even greater difficulties, the depth in the vicinity of the Liukiu Islands being 4.96 miles.

At the recent meeting of the joint army and navy board, which is in charge of the revision of the Endicott project of coast defenses recommendation was prepared and forwarded to Secretary Taft for the construction of a new cable ship at a cost of \$220,000, the preliminary plans for which have been prepared. It is pointed out that such a ship would be of considerable service in supplementing the work of the cable ship *Cyrus Field*, now commanded by Captain B. O.

Lenoir of the Signal Corps. Such a ship of 900 tons displacement could go to sea and perform the work which the smaller ship now does frequently at a risk of life.

J. T. Flynn, secretary of the North American Telegraph and Cable Company, of Seattle, Wash., has entered into negotiations with the United States government to lease the Alaska submarine cable and land telegraph lines.

Mr. Flynn states that the outlook for the ultimate disposal of the cable to private persons is hopeful and that in case the government relinquished the operation of the line his company, which is made up principally of Seattle men, would be able to secure the lease.

Mr. Flynn said: "The President, the Secretary of War and the chief of the signal corps have all recommended the withdrawal of the army from the operation of telegraph lines wherever private enterprise makes the same possible. It is our plan to construct a cable line to the Orient, with the western terminus at Vladivostok, and the acquiring of the government cable to Alaska would simply be one of the connecting links. It is to the interests of Seattle and of all of Alaska that this cable fall into the hands of interests friendly to this part of the country. We intend to operate the line and to cut down tolls at least 40 per cent. and to extend and improve the service as much as possible."

Secretary of War Taft, in response to a request from the House Committee on Interstate and Foreign Commerce, has sent a communication to that committee relative to the House bill for the construction of a cable connecting the mainland of the United States with the canal zone. The Secretary incloses a resolution of the Board of Canal Defense, which he says shows that a cable is indispensable to the military control of the Gulf of Mexico and the surrounding regions in time of war. At the present time the only cable connection is that by the Mexican and Central and South American telegraph companies, which extends from Galveston, Tex., via the Isthmus of Tehuantepec and San Juan del Sur, Nicaragua, to Panama. "The maintenance and operation of this system," says the Secretary, "depends in time of peace on the good will of two nations, Mexico and Nicaragua, while its exposed conditions are such that its maintenance in time of war would be practically impossible." The Secretary recommends that the chief signal officer be authorized to construct and operate a military cable, to be opened for commercial purposes, with a maximum rate of 40 cents a word, between Key West, Guantanamo and the canal zone at Panama. The estimated cost is \$1,000,000.

The recent completion of the German-Dutch cables in the Far East, says the *Electrical Review* of London, has been followed by the publication of particulars in reference to the development

of the submarine cables of Germany since the year 1871. It is asserted that Germany now possesses one-fiftieth of the total length of submarine cables in the world, as compared with the ownership of only 1-26th of the mileage about two years ago. The number of German cables which exceed 100 kilometers (62 miles) in length at present amounts to 13, of which the following is a list, giving the year of establishment and length in kilometers.

	Location of submarine cables.	Year established.	Length in kilometers.
1.	Emden, Borkum and Lowestoft.....	1871	421
2.	Hoyer, Westerland and Arendel (Norway).....	1879	472
3.	Emden and Valencia (Ireland).....	1882	1,585
4.	Emden, Borkum and Vigo (Spain).....	1894-6	2,080
5.	Sassnitz and Trelleborg (Sweden).....	1898	117
6.	Emden, Borkum, Horta and New York.....	1900	7,709
7.	Tsintau and Chifu (China).....	1900	457
8.	Tsintau and Shanghai (China).....	1900	702
9.	Emden, Borkum and Boston (England).....	1901	465
10.	Emden, Borkum, Horta and New York.....	1903-4	7,906
11.	Constanza (Roumania) and Constantinople.....	1905	343
12.	Menaas, Yap and Guam.....	1905	3,249
13.	Shanghai and Yap.....	1905	3,588
Total length in kilometers.....			29,112

It will be seen that the total length of the cables reaches 29,112 kilometers, or, say, 18,409 miles. Cables Nos. 3 and 9 belong jointly to Germany and England; No. 5 is the property in common of Germany and Sweden; Nos. 4, 6 and 10 are owned by the German Atlantic Telegraph Company; No. 11 belongs to the East European Telegraph Company, and Nos. 12 and 13 to the German-Dutch Telegraph Company, while the remainder represents national cables of the German government. It should be noted that the Emden-Valencia cable, which is not working now, served exclusively for telegraphic communication with America, but was discontinued when the German Atlantic cables were brought into operation.

Wireless Telegraphy.

A patent, No. 808,832, for a receiver and recorder for wireless and other transmissions, has been obtained by Fred. E. Gallagher, of San Francisco, Cal., assignor of one-third to Simeon L. Phillips and one-third to Walter D. Valentine, San Francisco, Cal. A type wheel having constantly-operative impelling means is associated with a pivoted armature carrying means for locking the type wheel, another pivoted armature carrying a striking hammer, a pair of magnets for each armature arranged respectively at opposite sides of its pivot, a controller circuit which includes one magnet of each armature and a striker circuit which includes the other magnet of each armature.

Recent New York Visitors.

Mr. W. M. Petty, city electrician, Passaic, N. J.

Mr. F. G. Boyer, superintendent of telegraph, Standard Oil Company, Oil City, Pa.

Mr. I. McMichael, vice-president and general manager of the Great North Western Telegraph Company, Toronto, Ont.

The Railroad.

Mr. L. C. McIntosh has been appointed manager of the Southern Pacific telegraph office at Los Angeles, Cal., and will have charge of all traffic and operators.

Mr. Edward Mason, chief despatcher of the Northern Pacific Railroad at Tacoma, Wash., and son of J. Q. Mason, formerly assistant superintendent of telegraph of that system, was married on January 23.

The next annual meeting of the Association of Railway Telegraph Superintendents will be held at Denver, Colo., on June 20. Mr. P. W. Drew, of the Wisconsin Central Railway, Milwaukee, is the secretary of the association.

George H. Thayer, for thirty years superintendent of telegraph of the Chicago and Northwestern Railway, died at his home in Norwood Park, Chicago, January 8, on his sixty-second birthday. He was a native of Vermont, and entered the service of the Chicago and Northwestern Railway Company as an operator in 1863.

At the January meeting of the Railway Signal Association held at the Grand Union Hotel, New York City, January 9, as previously announced, President C. H. Morrison in the chair, thirty new members were elected. The change in the constitution proposed at the last meeting was voted upon and adopted, so that the association now has two vice-presidents, the newly-elected officer being Mr. A. H. Rudd. A change in the by-laws was also adopted, as a result of which associate members will have only the privileges accorded to honorary members. The reports of the following committees were heard: Executive Committee, on a digest of the proceedings of the association; committee on storage batteries, the report being presented by I. S. Raymer; committee on rubber-covered wires, reported by Azel Ames, Jr. In the report on storage batteries Mr. Raymer called attention to the great value of these batteries for operating signals. The batteries are charged either by primary batteries or by power supplied from a generating station and are giving excellent service. A paper was presented by G. K. Rodgers describing an improved Sykes block signal. A paper on the care of storage batteries was read by H. W. Lewis, in which the author gives directions for the care and charging of batteries. Mr. F. F. Fowle, of the American Telephone and Telegraph Company, read, by invitation, a paper on specifications for line wire. Both the reports and papers were discussed vigorously and many interesting experiences were brought out.

The Magnetic Club of New York.

Col Albert B. Chandler, president of the Magnetic Club of New York, has appointed committees as follows: Entertainment: T. A. Brooks, chairman; T. L. Cuyler, Jr., Herbert Smith, Thomas E. Fleming, A. E. Chandler. Reception: Gardner Irving, chairman; Gerald Brooks, G. H.

Usher, M. R. Cockey, M. J. O'Leary, M. W. Hamblin, W. H. Mathews, John Costello. Finance: G. F. Fagan, J. W. Connelly, J. P. Clolery. Membership: John Brant, chairman; J. F. Skirrow, D. W. McAneeny. Press: J. F. Ahearn, chairman; J. B. Taltavall, T. R. Taltavall.

Official Diagrams of the Postal Telegraph-Cable Company's Apparatus, Etc.

The volume entitled "Official Diagrams of the Postal Telegraph-Cable Company's Apparatus and Rules Governing the Construction and Repair of Lines," issued under authority of the Postal Telegraph-Cable Company, by TELEGRAPH AGE, is nearly ready for delivery, the pages being in the bindery. The large number of orders already received for this important and unique publication will, therefore, soon be filled, and thereafter no delay will be experienced by buyers, all orders being filled on the day of their receipt. The large number of diagrams presented and the excellence of their execution constitutes a feature of the work that, in the perception and guidance afforded of the subject, is sure to win very general commendation. The nearly thirty pages of text covers an explanation of the Postal methods of construction, so explicit and comprehensive in detail, as to possess an interest very general in the telegraph service. The book is 7x4½ inches, a size at once handy and convenient for the pocket. The price is fifty cents, and this amount should be remitted, preferably by Postal or Express money orders, to J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

General Mention.

The office of the Postal Telegraph-Cable Company at Santa Fe, N. M., of which J. W. Mayes is manager, has been removed from the Claire Hotel to 309 Washington avenue, on the east side of the Plaza.

On Sunday night, January 21, a severe sleet storm visited Chicago and vicinity, the telegraph and telephone lines in all directions were broken down and for a time the Lake City was entirely cut off from communication with the outside world.

Reviving a former custom a ball was given at Helena, Mont., by the telegraphic profession of the state on January 26, which was largely attended. It is proposed that in future balls be given annually, to be held at different places in the state.

The Commercial Telegraphers' Journal, Chicago, beginning a new volume with the January issue, appears in magazine form. The initial issue in this changed condition embraces sixty-eight pages. It is well made up and shows evidences of prosperity.

During the year ended March 31, 1905, according to the annual report of the postmaster-general of New Zealand, there were sent 4,900,495 telegrams; telegraph lines were extended 7,943 miles, for which \$390,000 were expended, the total mileage being brought up to 23,704.

On Friday, January 26, a severe sleet storm in the South played havoc with the telegraph lines all over that section of the country. Poles were down over hundreds of miles in all directions south of Richmond. It was thought that the storm was more severe than the one of a year ago. Poles lines in many instances will have to be practically reconstructed.

The Telegraphers' Mutual Aid Association, of Boston, Mass., gave a ball and reception at Odd Fellows' Hall, in that city on January 26. Two thousand members and their friends participated in this great annual social event. Mr. A. V. Mann was floor director and Daniel Carter and Arthur E. Mason acted as assistants.

The construction party of men in the Signal Corps have completed a new telegraph line along the Highland of the Yukon, between Rampart and Fort Gibbon. This permits the abandonment of the section between Baker and Gibbon, which was exceedingly difficult to maintain in summer, owing to the extensive swamps of the lower Tanana.

Mrs. Hattie Williams, a Western Union telegraph operator at Sherburne, Chenango county, New York, enjoys the distinction of being one of the oldest operators in the state. For more than fifty years, it is said, she has manipulated the key at that point. Another old timer is Albert C. Stebbins, the Western Union manager at Waterville, not far distant from Sherburne, whose term of service is nearly co-existent with that of Mrs. Williams.

A bronze statuette of Samuel F. B. Morse, said to be an excellent likeness, the work of an unknown sculptor, has been presented by the Dutchess County Society to the Metropolitan Museum of Art, New York, through its director, Sir Caspar Purdon Clarke, to be placed among the collection of original Morse telegraphic instruments. The statuette, believed to be of French origin, was discovered by William F. Kanerberg in the cellar of a London art dealer, where it had lain for twenty years, having belonged to the estate of an English nobleman.

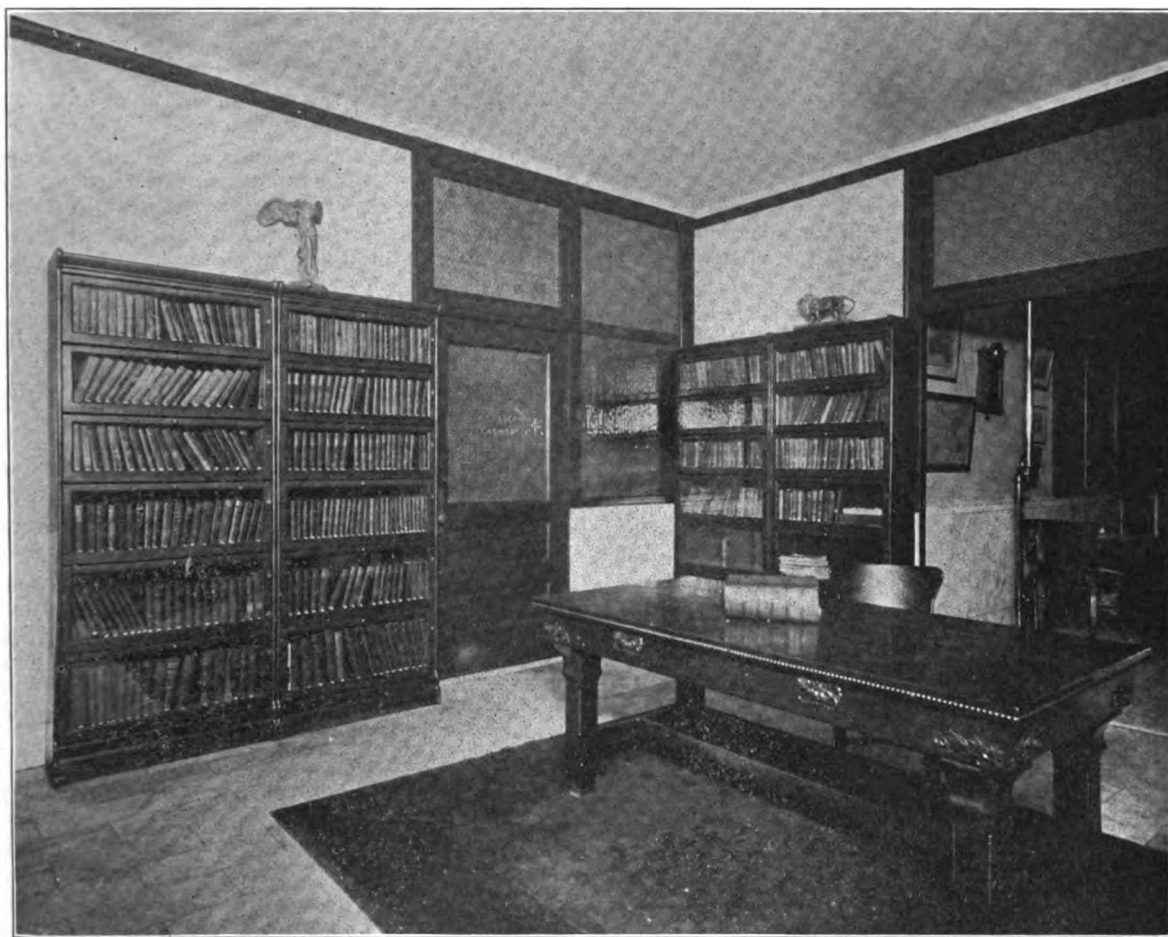
George G. Glenn, formerly and for years cashier and the trusted employee of the Postal Telegraph-Cable Company, at Philadelphia, Pa., whose embezzlement of \$12,000 of the funds of the company in the spring of 1905 attracted wide attention, pleaded guilty to the charge on January 22 and was sentenced to an imprisonment of one year, the same to date from time of commitment. This comparatively short term was due to the fact that counsel for the telegraph company joined in the request of the prisoner's counsel for mercy. The man had been already punished severely, they said, as his downfall had been published broadcast in the papers, and a brother had died through grief and shame caused by the man's arrest.

The Library of the Postal Telegraph-Cable Company at Chicago.

When the Postal Telegraph-Cable Company established their headquarters in the Stock Exchange Building, Chicago, it was decided to devote space to an employees' reading room and library. To this end a large number of the employees and officials contributed each a book as a nucleus. Meetings were held and a society formed entitled "Postal Telegraph Employees' Library Association" and by-laws and rules similar to those of public circulating libraries were adopted. An assessment of ten cents month-

the Ladies' Home Journal, the Delineator, the New Idea, Saturday Evening Post, etc., were, by the courtesy of their publishers, sent free of charge.

Supplementing the circulating feature of the library it was arranged to establish classes for instruction in the various branches of the business, the chief bookkeeper, service clerks and others lending their assistance and instruction in the manner of making up accounts, etc., and the chief operator, wire chiefs and others instructing as to the electrical side of the business. Prof. Woodworth, of Lewis Institute, was also secured



VIEW OF THE LIBRARY AND READING ROOM OF THE POSTAL TELEGRAPH-CABLE COMPANY, CHICAGO.

ly on each member was levied, the money so obtained being used to purchase books and magazines, the cases and the library room having been donated to the association by the officials of the company.

The success of the enterprise was largely augmented by voluntary contributions of books by persons interested. The company's attorneys in the western division, Messrs. Loesch Bros. and Howell, contributed a fine selection of electrical books, and Mr. George C. Flegel, manager at Westville, Ind., also donated ninety-eight books from his personal library. Periodicals, such as

to deliver two lectures each week, one Saturday afternoons and one on Tuesday nights on electrical subjects, which he demonstrated with the best machinery and instruments which the institute afforded. The topics of this splendid course were finally arranged in the order of logical sequence and proved to be highly instructive. Other well-known authorities in this special line of education have appeared from time to time, thus adding to the attractiveness and interest of the undertaking.

As the idea of the enterprise grew other libraries were established in other western division

cities, and a contribution of about one hundred books was sent from the Chicago association to Cleveland, O., to assist in forming a similar association at that point.

At the present time the number of books in the Chicago library is ten hundred and eighty-four, embracing art, photography, science, natural history, biography, social science, history, electricity, engineering, telegraphy, mechanics, fiction, law, medicine, religion, poetry, essays, language, etc., in addition to the standard monthly magazines, such as the *Scientific American*, *Western Electrician*, *World's Work*, *Century*, *Harper's*, *McClure's*, *Everybody's*, etc.

The aggregate receipts since the library was established in 1895 amount to about \$1,694; the average withdrawal of books, four per day. On January 1 the association had a membership of one hundred and fifty.

J. E. Pettit is the president of the library association and C. Otto, secretary and treasurer.

Fuses and Arresters in Telegraph Wires.

BY FRANCIS W. JONES.

Telegraph companies have a greater enemy than lightning and that is the invasion upon their wires of foreign currents, of almost all voltages up to forty or fifty thousand alternating, and to several thousand volts direct. The quantity in which these currents may visit telegraph offices depends, of course, entirely upon the conductivity, inductance and capacity of the telegraph circuits.

It should be borne in mind that the lightning arresters attached to wires, in various offices, are practically condensers of small capacity, and to the extent of this capacity, furnish conducting paths between the line and earth for alternating currents. If the arrester is placed next to the line an alternating current seeks this path and is apt to break down the insulating barrier and start an arc, that in several cases has resulted in disastrous fires. Some offices have been damaged in this manner, not only the apparatus, but the offices themselves.

Lightning arresters as situated in telegraph service frequently have their insulation very greatly lowered on account of the accumulation of moisture, dust, etc., and arresters in some locations insulated by a hundred mils of mica present no greater resistance to the escape of electric currents to earth than arresters in dry situations having but very few mils of mica.

Much damage is done by what are called "sneak currents," which, as a rule, are low in quantity but are driven by high voltage at the point where the current is impressed upon telegraph wires, and if a breakdown at an arrester takes place the sudden decrease in the resistance of the circuit greatly augments the current under high pressure and a bad fire is likely to be the immediate result.

Sneak currents will frequently pass through one-ampere fuses without blowing them, but if

the fuses are ahead of the arrester the fuses will probably blow at the time that the short circuit takes place at the arrester and thus head off a disastrous arc in the arrester.

The menace of foreign currents is a constant one, day and night, and the trouble from lightning is infrequent. In certain localities where thunder storms grow in bewildering luxuriance the lightning occasionally causes serious interruptions to working telegraph circuits for limited periods of time, and in view of this fact amperé fuse-blocks with clips have been placed so that the cartridge fuses may be readily replaced when opened by lightning at terminal offices. Intermediate offices are supposed to have twenty-ampere fuses in the main circuits and half-ampere fuses and arresters in the instrument loops. The latter are cut out when not in use.

If a telegraph company could so arrange its wires as to render them entirely free at all times from contact with electric light or power wires it would be easy to deal with the old enemy "lightning," or if the Lord would be so kind as not to direct his shafts of lightning at telegraph wires we could take care of foreign light and power currents, but when an attempt is made to deal with both of these troubles at the same time we find ourselves between the "devil and the deep sea."

British Honduras Reached by Telegraph.

Belize, the capital of British Honduras, is now connected with the United States by telegraph. Formerly messages were sent to New Orleans, then carried every Thursday by mail to Belize, requiring three days or ten days if the weekly mail was missed at New Orleans. On December 15 the first telegram ever received direct at Belize was delivered at 10.30 A. M., having been dispatched at Louisville, Ky., at 3.30 P. M., December 14. No tariff has yet been fixed, but the probable through rate from the United States will be \$1 per word.

The new telegraph lines connect with the Mexican system. The Mexican department of war erected the line from Payo Obispo, via Santa Cruz, to Peto, Yucatan—about 225 miles—solely for official purposes. Last November it was transferred to the department of public works and its use granted to the general public. Payo Obispo, Mexico, is across the Rio Hondo, six miles from Consejo, British Honduras. The gap in the telegraph line requires a boat as yet to carry the messages, but as soon as Mexican authority is granted a cable will be laid under the river. There will then be an unbroken line established from Belize to Galveston. The new line means much for American commercial interests in that region.

The new classified catalogue of books on the telegraph, telephone, wireless telegraphy, electricity, etc., published in *TELEGRAPH AGE*, may be had for the asking.

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NEW YORK, FEBRUARY 1, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, in obedience to continually growing demands made on it, materially increased its facilities of late. The desire to furnish our readers and buyers everywhere the best means possible of securing such technical books they may require. Aiding buyers in their selection with accurate information, which at all times is cheerfully furnished, promptness in sending books, filling all orders the same day of their receipt, has brought to this department a generous clientele. Catalogues fully covering a range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cables, will be sent to any one asking for the same. These books of especial aid to buyers inasmuch as they contain descriptive references of each volume listed, freely with full chapter titles.

All persons who desire to secure bound volumes of TELEGRAPH AGE for the year 1905, which includes the very full and valuable index, may obtain the same for \$3 per copy, orders for which, accompanied by the cash, should be addressed to the publisher of this journal. From no other source can there be obtained so complete a history or record of events of the telegraph, the submarine cable, wireless telegraphy, telegraphic inventions, and general news and information in the telegraphic world, at home and abroad, as is afforded in this volume. In addition to this, its articles on telegraphy, published under the general title of "Some Points on Electricity," present a series of practical studies, fully illustrated by diagrams, that every operator and student should possess.

The messenger boy appears to be an uncer-

tain quantity in the business economy of this town. The other day he went on strike with meteoric suddenness and with all the visible symptoms in performing the act such as are usually displayed by his elders, thus clearly demonstrating his aptitude to grasp the ethics of the situation. According to custom, as too frequently manifested by the class of gentlemen who are wont to go on strike, when his demands were not instantly complied with, he resorted to violence and rowdiness. Of course he disarranged all methods, calculations and schedules observed in the telegraph, cable and district messenger companies, exasperated managers and customers alike, defied the police, and even threatened as part of his propaganda to make the Stock Exchange look like a county fair ground after the fair is over, and to put J. Pierpont Morgan out of business. There were, indeed, savage declarations, and to avert such dire extremities, which, of course, involved the ultimate ruin of Wall Street, certain concessions were granted, the boys abandoned the war path, dropped back into normal business routine, the incident of the strike was closed and peace prevailed.

The success that has attended the efforts of E. J. Nally, the general superintendent of the western division of the Postal Telegraph-Cable Company at Chicago, in establishing a library for the benefit of the operators of his company, is worthy of all praise and emulation elsewhere by others high in authority in the telegraph service. As explained on another page in this issue in an illustrated article, suitable rooms for library purposes have been set apart in the Postal company's main building in the Lake City. These have been attractively furnished and the shelves filled with a carefully-selected assortment of books, both of a technical and general character. The library affords a cosy and delightful place at a purely nominal cost, for it is designed to be self-sustaining, to the operator for study and for intellectual recreation amid quiet and refined surroundings. This scheme of Mr. Nally's, which embodies ideas of fundamental value to the employees of his company, has been well thought out, and is now believed to be established on a permanent basis. Its beneficent influence, carried to the desirable point of imitation, is already beginning to be manifest at other places.

Leasing of the Alaskan Telegraphs.

As showing the evident trend of Governmental thought respecting the control of public utilities, it is observed that a proposition made by company interests to lease the Alaskan telegraphs, embracing the submarine cable and land line systems, is reported to be receiving favorable consideration on the part of the Government. Although the Government took the initiative in this construction, as it did in the building of the first railroad across the continent, such pioneer service in

both instances having in view the early reaching of a desired objective and the development of a country at a time when its accomplishment was urgent, yet difficult of attainment by private enterprise, it apparently, if the report be true, seems willing now, as before, to surrender jurisdiction into the keeping of individual hands.

Other things being equal, we believe as a fundamental proposition that the Government may well relinquish this particular system of telegraph and, standing aside, permit private parties to assume its management, proceed with its development and extension as future necessities and opportunities may suggest.

Gen. A. W. Greely, chief of the Signal Bureau, under whose able direction the entire Alaskan telegraph system, land and cable lines, has been built, is quoted as having declared himself to be in favor of all cable and land line telegraphs whose mission is mainly to serve commercial interests, to be directed by private endeavor. We can but commend such an utterance, for if made by the General, it is in keeping only with his well-known statesmanlike and broad-minded views on all questions of domestic economy. No one realizes more forcibly than the General that the Government should not exercise permanently a direct interest in telegraph and cable systems, except in time of war, when, of course, if necessary, civil right must give way to military needs.

The phrase "to revolutionize the telegraph" appears with such oft-recurring regularity in the daily press, sometimes, indeed, it must be said, in the technical journals as well, in connection with descriptive accounts of inventions designed to overcome the present system of telegraphing—devices not always fashioned by telegraphers, who are supposed to be of practical mind, but frequently by bright young men who have made the "subject a study," as to become mildewy in disquisition and in meaning. It was ever thus, but the Morse system somehow has not yet been displaced. The inventor of the telegraph, who, as time recedes, stands out more and more distinctly as one of the great figures of history, builded even better than he knew. His knowledge and grasp of his subject was absolute and comprehensive. The telegraph may be declared to be old-fashioned in its method of operation, in need of reformation, and so on to the end of the chapter, all of which we have become accustomed to hear with increasing weariness, yet criticism and endeavor thus far seem but to leave its position more and more impregnable. Theory and practice appear to be as widely separated and as irreconcilable as ever.

Canadian Prosperity.

The recent development of Western Canada and the rapid strides that the Dominion is making as a manufacturing nation is of special interest to a large number of telegraphers, as there is hardly a telegraph office of any considerable

size on this side of the line that has not one or more men who were born and raised in Canada.

There was a time when salaries and other inducements were such as to bring a majority of the younger operators to the United States seeking better-paying positions in the larger American cities. But the last few years have wrought a radical change in these conditions. Now the wonderful prosperity of Canada is drawing from the United States, both Canadian and Yankee to share in that prosperity, and for the telegrapher there is no place on the continent to-day that offers greater opportunities. A new transcontinental railway is being built; numerous branch roads and extensions are under way or projected; new lands are being opened and the launching of new enterprises of all sorts are of weekly occurrence. All the larger cities and towns are showing a tremendous growth, and no better cities exist than the larger ones of Canada. Montreal, it is claimed, has a population of upwards of 400,000; Toronto, 265,000, and Winnipeg, 100,000, and they are metropolitan in every sense of the word. In the past year hundreds of Canadians have returned to the Dominion to live after an absence in some cases of several years. A great many more, and among them many members of the telegraph fraternity, are planning to return in the near future. The improvement in business conditions has been so manifest that the telegraph companies have been obliged to erect several hundred miles of new lines during the past summer to satisfy the demands of their increased business.

Turned "Y" Into "H."

A firm of bag manufacturers of New York have recovered a verdict of \$2,200 in the Supreme Court in Brooklyn against one of the telegraph companies. A western concern telegraphed to the bag company asking for its price on a contract for 25,000 sets of bags. Before sending the bid the bag company telegraphed to a southern company asking for prices on cloth suitable for filling the contract. The company telegraphed in reply that the price for the narrow would be "two-eighth" and for the wide "three-eighth." This, as interpreted by the plaintiff, meant that the price would be "2½" and "3½" cents per yard for the two widths. Acting upon this telegram, the plaintiff sent in a bid to the concern in the West, who accepted it.

Subsequently the southern company wrote the plaintiff their terms, which proved to be "2.80" and "3.80" cents per yard. The difference in the price between the telegraphic figures and those in the letter, the plaintiff alleged, meant a loss to them of \$2,200 on the contract.

Testimony was given to show that the operator had made "eighth" out of "eighty." The plaintiffs could not get the western firm to cancel the contract and the southern house contended that they had not made any mistake. Suit was then

begun against the telegraph company. The latter disclaimed the liability, because the message was not ordered repeated. The defendant will carry the case to the highest court.

An Interesting Reference to the Celebrated Page Patent.

The following letter from Mr. D. H. Bates to Leslie's Weekly, complimenting the latter upon the excellent and unique edition in December last, in commemoration of the fiftieth anniversary of that publication, contains an item not before published relating to the Page patent which should be of special interest to telegraphers, especially those respectively employed at the time, 1880, by the Western Union and American Union telegraph companies. Mr. Bates says:

"Noting the article in the early number on spiritualism, and particularly the lecture of the celebrated scientist, Dr. Robert Hare, of Philadelphia, in Broadway Tabernacle, November 24, 1855, I am reminded of an incident occurring twenty-five years later in which Dr. Hare also played a part in spiritualistic communication with his father. It appears, from Frank Leslie's report of Dr. Hare's lecture, that he was first confirmed in his belief in spiritualism by the results of his experiments with a revolving disk alphabet invented by himself, so operated as, in his opinion, to preclude imposture, and by means of which he believed he had established direct communication with his deceased parent. In the course of the experiment the spirit first indicated his presence by causing the index on the disk to show "yes" in response to a question, and the initials of the spirit then being called for, the index pointed to "R. H." Dr. Hare then asked, "What, my father?" whereupon the word "yes" at once appeared. His departed father afterward said in reply to questions that he was happy, and that Dr. Hare's mother and sister were with him; but, alas! when the spirit was asked, "Is my brother with you?" the word "no" was spelled out on the disk. We are left to conjecture where the brother was located, and whether or not he was happy. One is led to wonder why communications from the spirit world as uniformly reported in cases of spiritualistic manifestations are so lacking in intelligence and utility, and, as a rule, so silly and inane.

"The latter incident to which I refer was in 1880, and occurred under these conditions: Shortly after the Civil War, Congress ordered the issue of letters patent to Charles Grafton Page, covering a very important invention, which, under the patent law, could not be granted to him because, when he made the invention, or discovery, he was filling the office of commissioner of patents. The patent covers broadly the use in the Morse telegraph of a combination of the armature of a relay magnet and an adjustable spring, the function of which was to pull the armature away from the magnet in the

intervals of no current. This principle was all controlling, and, suffice it to say, no telegraph line could be operated without it. The Western Union Company, so it was said, had bought the Page patent for \$100,000 for telegraph purposes, and the Gamewell Fire-alarm Telegraph Company had secured the right for fire alarms. An infringement suit against the Holmes Burglar-alarm Telegraph Company had just been decided in favor of the Western Union company, when Jay Gould started the American Union Telegraph Company to compete with the Western Union.

"The latter company promptly sued its new rival, with which I was at the time associated, and asked the court for an injunction, which, if granted, would have thwarted Gould's far-seeing plans. He retained David Dudley Field, John F. Dillon and other celebrated counsel to defend the American Union Company. Stephen D. Field, son of Judge Field, of the Supreme Court, and a noted electrical engineer, devised a plan to avoid the Page patent, and many other inventors submitted ideas, but none of them was wholly effective, and Gould's case seemed hopeless. Our experts searched old books and records, hoping to discover anticipation, and finally unearthed a publication about 1845, giving an account of a demonstration in Philadelphia before a class of students by Dr. Robert Hare, the father of Dr. Hare, the spiritualist, who was present at his father's lecture. The experiment was intended to show the principle of the attraction of an armature by a relay magnet, discovered in 1832 by Professor Joseph Henry, who was the real inventor of the telegraph, Morse's invention, great as it was in its future usefulness and worldwide application, simply covering the well-known "dot-and-dash alphabet." Old Dr. Hare showed his students a steelyard balance with a good-sized magnet on one end of the scale, and by moving the index, the strength of the magnet in pounds was ascertained. Here was, it seemed to us, the equivalent of the Page patent, and an anticipation of his important and useful discovery over twenty years before the date of the patent.

"Inquiry for Dr. Hare resulted in finding that he was then (1880) at Cape May, and we sent our expert, Mr. William Hadden, by first train to interview him and obtain his evidence to submit to the court. Mr. Hadden reported his conference with Dr. Hare, who was then quite old, and who said that he remembered his father's experiments with the steelyards, but not clearly, and if he were allowed a little time he would refresh his recollection. Accordingly, Mr. Hadden waited, with anxiety mixed with hope, and when Dr. Hare sent for him the following day he felt sure of a successful visit. When they met Dr. Hare opened the conversation by saying that since Mr. Hadden's first call he had talked with his (Dr. Hare's) father. This information was a great surprise to Mr. Hadden, who knew nothing of Dr. Hare's spiritualistic beliefs; and when the doctor went on to say that he had asked

his old father about the 1845 experiments, and that he had replied that he could not say for a certainty just what they consisted of, Mr. Hadden concluded he was in the company of an insane person, and, at the earliest opportunity, withdrew, feeling that, even if Dr. Hare had clearly remembered the vital circumstance, and had been willing to testify, the plaintiff's counsel would have proved the incompetency of the testimony.

"A few months after this occurrence Gould and Vanderbilt settled the Page patent question by agreeing to a consolidation of the American Union and Western Union telegraph interests, which, in all probability, was hastened, to some extent, by Dr. Hare's inability to obtain from his father's spirit definite information on the subject of the early experiments with a magnet in 1845."

Mr. Crary Drops Into Reminiscence.

Mr. A. Crary, repeater chief of the Western Union Telegraph Company at Cincinnati, talks pleasantly in a reminiscent vein of his experiences when located in Denver, Colo., in 1871, to which point he went at the earnest solicitation of the then manager of the Western Union Telegraph Company at that point, W. H. Harrington. He said:

"Denver then was not the telegraphic centre that is to-day. The office was on Holliday street, between 4th and 5th, a one-room, one-story brick affair. It had two wires to Cheyenne, one to Kansas City, one to Santa Fe (originally the United States and New Mexico Telegraph Company, B. F. Woodward, secretary.), and one wire to Georgetown. This wire ran by Golden City, following the stage route to Central City, thence down the famous Virginia Canyon to Idaho City and so to Georgetown. There was a large amount of business to be attended to, more especially when the Cheyenne-Omaha overland route was down. Then Denver would have to relay all overland business to Kansas City.

"The force at that time consisted of W. H. Harrington, manager; B. F. Bush, T. S. Cunningham and myself. 'Con' Gatch came in from Georgetown soon after, but after a month's stay went back to the States. W. S. Lewis, commonly called 'Billy Lewis,' reached Denver on the 17th of November from the States, bringing with him the greatest snowstorm known to that country. For two weeks we kept the stove warm, but there was no work, the wires all being down. Mr. Harrington resigned and went to Salt Lake on October 20.

"April, 1872, was made memorable to the Denverites by the visit of Grand Duke Alexis, of Russia, accompanied by Gen. Philip Sheridan and staff. Gen. Sheridan came to the office and left

word for Gen. Custer, who was expected, where he (Custer) might find him. About nine o'clock that night Gen. Custer came in. His tall figure, dressed in full uniform, with his hair falling on his shoulders, made a picture. I got pretty well acquainted with Gen. W. S. Rosecrans, who was in Denver on business connected with a proposed railroad from El Paso, south, for many telegrams passed between him and President Juarez, of Mexico."

Mr. Crary opened the first telegraph office at Black Hawk, Colo.

A Junior Old Time Telegraphers' Society.

"The Old-Time Telegraphers of the Pacific Northwest" is the title of an organization, temporarily constituted, of telegraphers formed for social purposes at Spokane, Wash., January 3. Fifteen years is the limit of time necessary to qualify for membership. The following named were elected as officers: T. P. McKinney, chief operator, Western Union Telegraph Company, Spokane, president; D. Fletcher, manager Postal Telegraph-Cable Company, Spokane, vice-president; F. E. Michaels, formerly superintendent of telegraph of the Spokane Falls and Northern Railway System, second vice-president; A. D. Campbell, manager, Western Union Telegraph Company, Spokane, treasurer, and A. W. Neimeyer, secretary. The next meeting will be held in Spokane, probably in March, when it is expected a permanent organization will be effected.

Meeting of the Cincinnati Morse Mutual Benefit Association.

The sixteenth annual meeting of the Morse Mutual Benefit Association of Cincinnati, O., was held in that city on January 13, and was a notable gathering when measured by the numbers in attendance and by the enthusiasm displayed. The organization shows a steady growth and its financial condition is declared to be entirely satisfactory. There has been a comparatively light demand upon its resources, death not invading its ranks during the year.

The election of officers resulted as follows: L. E. Moores, president, re-elected; A. M. Creighton, vice-president; J. F. Colligan, secretary, a position he has held continuously since this association was organized; Frank Minning, treasurer. Executive committee: A. L. Buchanan, J. J. Beyersdorfer, T. T. Connelly, B. C. Cheval, H. P. Donnelly, W. H. Ormston and J. R. Pigman. Auditing committee: J. N. Jacob, A. B. Clark and G. W. Lampton.

After the business meeting the members and their friends repaired to the dining room, where covers were laid for an even hundred. The remainder of the evening was devoted to music, recitations and dancing.

What is strength without a double share of wisdom?—Milton.

The New Engineering Building Available to Telegraphers.

The question has been raised whether the privileges of the Engineering Building, soon to be erected in New York City, the gift of Andrew Carnegie, would be extended free to the use of telegraphers, or any of their societies, who are not affiliated with the American Institute of Electrical Engineers or of other and allied organizations of similar character.



ENGINEERING BUILDING, NEW YORK.

To be erected on Thirty-ninth Street, between Fifth and Sixth Avenues.

A prominent member of the building committee of the Engineering Building, who was a few days since questioned regarding this matter, after due consultation with other members, said:

First of all, I would say that the spirit of Mr. Carnegie in making his gift, and the national Engineering Societies in accepting it, is to render it not merely limited to a few persons, but fruitful of the greatest good to the greatest number. Even from the start, the building will be the home and centre of societies representing some 20,000 engineers, professional men, and

organizations connected with technical industries. These societies will each have their separate and individual offices, and to that extent the building will be reserved, as each society will, of course, carry on its business in its own quarters. This, however, when all is said and done, only accounts for a very small part of the fourteen-story structure; all the rest, limited only by the resources of the trustees, is freely devoted to mankind, and particularly to those who are interested in electrical, scientific and industrial advance. The library and the museum will be open to everybody, and the library is to be conducted in harmonious association with, and virtually, it is proposed, as an ally of the great public library immediately adjoining on Bryant Square. In other words, that library proposes, under such a plan, to leave to the United Engineering Library the care of everything relating to the literature of engineering, including files of publications, sets of periodicals, old books, and all the new ones bearing on electrical engineering, mechanical engineering, civil engineering, mining engineering, and a score of allied arts. In like manner, the museum will be open to the public. Beyond this, several floors will be taken up by the large and minor meeting rooms, which will be available for convention purposes, for monthly and quarterly meetings, alike for societies within the walls and for the many others in the city who desire only to have a meeting room occasionally. The co-operative plan of conducting the building is not to collect rent from anybody, but simply to arrive at the bare operating and maintenance expenses, and charge the societies pro rata for the floor space used for offices, etc. In addition to this the hospitalities of the building are to be freely extended for convention purposes, which have now become so large a part of our national and professional life. When the Old Time Telegraphers' and Historical Association meet here, or the Association of Railway Telegraph Superintendents, or the Telephone Associations, or the National Electric Light Association, or the electrical insurance people, or the Electrical Contractors, they, like the electrical engineers, will find ready and waiting for them, a magnificent series of large and small audience chambers, fitted with everything required for demonstration and experiment, the like of which does not exist in the world elsewhere. You can readily see what an inestimable boon to scientific engineering and industrial progress generally this building will be from the very day its doors are opened. Not only will these facilities be available to individual telegraphers or their associations, but the trustees will be greatly disappointed if the opportunities are not very freely availed of.

As to the papers and discussions of the institute, and their value to the managers of the telegraph service, I can only point to the record of the institute, and to the stately series of volumes containing its Transactions. It would perhaps not be true that every paper read before the institute is of value to a telegraph manager, but it is safe to assert that there are very few papers in which an intelligent, progressive telegraph engineer and manager will not find something of interest, value and benefit. Moreover, as pointed out, the building will be not merely the home of the Institute of Electrical Engineers, but of some fifteen or twenty other bodies, and even more than that number will have their headquarters within it. From these bodies will proceed yearly a mass of literature on which, outside of what is done by the technical press, the whole ad-

vance in the arts and sciences must be based, touching and affecting telegraphy, as well as every other electrical application.

The very fact that such a building exists, that bodies of earnest men seeking scientific truth can get together and discuss facts and papers, will be, it is believed, a notable factor in the creation of many new societies which have been deterred and hindered hitherto, because they have no home, no easy place of meeting, and no building where they could share facilities in common with kindred societies. I am myself conversant with one or two movements in this direction already, and I believe we shall soon see other bodies, in the electrical, the telegraphic and the telephonic fields come into successful being, because this great building will give them a home and a rallying point.

The Nantucket Lightship a Telegraph Station.

Just at this time, when the loss of relief lightship No. 58, with its expensive equipment of wireless telegraph apparatus, is fresh in the minds of the public something of the duties and dangers which the men have to face on Nantucket shoals will be read with more than ordinary interest, says a writer in the New Bedford Standard.

Few realize what it means—this service on a lightship moored forty-two miles from the Island of Nantucket, tugging and pulling at a heavy chain, tossing and pitching in fierce seas, and yet all the while remaining as it were in the same identical place for weeks and weeks. Unlike other fabrics sailing the Atlantic Ocean, she remains in this one place—a beacon for transatlantic liners and other carriers on old ocean.

No one doubts for a moment the necessity for a staunch vessel at this most exposed station, but the wonder is that the government finds men willing to accept positions on such a perilous tour of duty. Monotonous? Why, the meaning of that word is explained only in such an experience. Occasionally speaking other vessels and shore liberty is their only relief.

It may, however, be remarked that the lightship serves as an ocean relay station for wireless communications between the shore and vessels at sea, equipped with wireless apparatus.

Right here it might be mentioned that the Nantucket shoals lightship No. 66 is a composite-built vessel of 500 gross tons, and was constructed at Bath, Me. She is moored at her station in thirty fathoms of water, which is in latitude 40 37 north, longitude 69 37 west and about forty-two miles south southeast of Sankaty Head light-house on Nantucket Island. She is one hundred and sixteen feet in length over all, has a breadth of beam of thirty feet and a load draught of thirteen feet seven inches. Fitted with a four-bladed propeller eight feet in diameter, having nine and a half-feet pitch, she can, under favorable conditions, steam from eight to nine miles an hour.

The ship is also furnished with two complete generating sets of the General Electric type, of eight kilowatts each and a voltage of 110. There are eight masthead lamps of 100 candle power each, visible at sea in clear weather for a distance of about twelve miles. She also carries fresh

water in iron tanks to the amount of 12,000 gallons for use in the boilers and cooking, and is fitted with a steam Hyde windlass of 200 horse power.

Just before leaving port a few weeks since the Telefunken system of wireless telegraphy was installed, which is believed to be an improvement on the system formerly in use, and under favorable conditions will send messages for a distance of 250 miles.

Thus it will be seen that the United States government is under no small expense in fitting a lightship of the type of No. 66, which, on the present tour of duty, has nine men and four officers.

Three expert telegraphers are detailed from the United States navy for wireless duty on board.

Ocean steamers and steam and sailing craft of all description are reported by the wireless apparatus to the navy reporting station at Newport, R. I., and commercial messages are exchanged with the wireless telegraph station on Nantucket island. From this point they are transmitted from Woods Hole, Mass., via the Martha's Vineyard Telegraph Company's cable, where they are turned over to the Western Union and Postal telegraph companies land lines. Freight and oil tank steamers are given instructions and orders as to what port to proceed for a cargo. These steamers have cabled instructions before leaving European ports to proceed to the light vessel stationed on Nantucket shoals and there receive their orders. Thus it will be noted that ships bound for this country while actually out of sight of land receive wireless telegraph orders respecting the destination of the vessel.

Another feature of the equipment which should not be omitted is the submarine bell. This bell is rung by a steam cylinder from the deck connected with a rod and chain to the submerged bell thirty feet below the surface of the water. It rings the number of the ship—six strokes and a pause, followed by six strokes—sixty-six. The sound from this bell can be heard by passing steamers that are equipped with a telephone receiving apparatus at a distance of from four to eight miles. Men have heard it in the cabin of a fishing schooner two miles from the station. The use of a submarine bell in foggy weather eliminates the defects of the steam whistle, which sometimes in a gale of wind is heard not more than a quarter of a mile to windward, while the bell can be heard in all directions. It being below the surface of the water therefore the action of the wind upon the sound waves has no effect whatever.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

A. M. Beatty, the New Postal Manager at Atlanta.

Alfred Miles Beatty, who has been advanced from the managership of the office of the Postal Telegraph-Cable Company at Knoxville, Tenn., to that at Atlanta, Ga., there succeeding J. E. Scofield, resigned to enter other business, an announcement already made in these columns, was born at Eaton, O., July 25, 1865. Beginning life as a compositor in a newspaper office, he acquired the art of telegraphing by working nights for the United Lines Telegraph Company, the predecessor of the Postal Telegraph Company. The beginning of his telegraphic career dates from July, 1885, when he became a night operator for the Cincinnati, Hamilton and Dayton Railroad at Carthage, O. In 1887 he entered the service of the United Lines Telegraph Company



ALFRED M. BEATTY.

Manager at Atlanta, Ga., of the Postal Telegraph-Cable Company.

at Cincinnati. This was really his initial Postal service. While conspicuously a Postal man, yet during the years 1889 and 1891 he was employed as second clerk and as operator for the Western Union Telegraph Company in the Illinois state prison at Joliet, that state, afterwards holding a clerkship during 1892 in the office of Col. Clowry at Chicago, then vice-president of the Western Union company. The subsequent positions held by Mr. Beatty in the Postal service were as follows: manager at Troy, O., 1896-97; cashier at Birmingham, Ala., a portion of 1897; manager at Jackson, Mich., 1898; clerk in the office of Superintendent W. I. Capen at Cincinnati, 1898-99, becoming city solicitor of the main office in Cincinnati in the latter year; manager for a brief term in 1899 at Champaign, Ill.; manager at Bloomington, Ill., in 1900 and 1901, going thence to the head of the Knoxville, Tenn., office during the latter part of 1901, until his recent transfer to the Georgia capital. His incumbency at

Knoxville is referred to in terms of praise for its efficiency.

Mr. Beatty is married, a man of domestic habits, well informed in the study of the telegraph and careful in his methods. His practical knowledge and excellent executive ability well qualify him for the increased responsibilities of his new office in which, it may be remarked, he enters in the prime of life.

Capital Punishment for Stealing Wire.

A City of Mexico correspondent states that a bill has been introduced in the Mexican Congress to make the theft of copper wire, used for transmission purposes, punishable by death in case such theft causes fatal accident to any one. It is stated that several thousand dollars worth of copper wire has been stolen from pole lines in the City of Mexico recently.

In the United States wire stealing still continues. Recently one of the telegraph companies succeeded in sending a convicted wire thief in Pennsylvania to the penitentiary for three years. Heretofore the terms of punishment meted out to criminals of this kind have been so lenient as to encourage rather than to deter copper wire robbing propensities. The telegraph and telephone companies are now endeavoring to impress upon the judges the importance of adopting drastic measures for the punishment of this sort of crime by imposing longer and more severe forms of sentence.

"Farmer" Lawton Gets Gun of Ye Olden Time.

It requires all kinds of presents to make people happy; even Santa Claus has to do much figuring to please all. He had "Old Farmer" Lawton, night chief operator of the Western Union Telegraph Company at Denver, remarks the Daily News of that city, guessing the night before Christmas. When Mr. Lawton went on duty he found an old flintlock dueling pistol upon his desk, bearing such an ancient date that many believed it had been dropped by DeSoto when that gentleman discovered the Mississippi River.

The "farmer" has not fought a duel in forty years, neither has he handled firearms much since the Revolutionary War, and was quite timid in handling the weapon, but finally mustered up courage enough, by holding it at arm's length, to make his way to the city hall for the purpose of securing a permit to carry it home, but by the time he reached police headquarters his nerves had completely forsaken him, and he went direct to his old friend, Hughy Smith, the night jailer, and requested Mr. Smith to either lock him up, or the old gun, he didn't care a darn which one.

The testimony of progressive operators is that TELEGRAPH AGE is so thoroughly comprehensive in character as to make it absolutely indispensable to those who would keep informed. Its technical articles are of high practical value. Write for a free sample copy.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

RICHMOND, VA., WESTERN UNION.

The force of this office now consists of nearly seventy operators and there is always plenty for them to do. There are not more than a hundred and twenty-five wires passing through this office, but when it is taken into consideration that with about five exceptions they all terminate or are repeated here, it will be seen that we have quite an establishment. The work of construction continues and our office is already much crowded. There appears to be no immediate prospect for a change in quarters, but we all hope for the best.

Our former chief operator, Mr. L. D. Beall has been succeeded by Mr. J. B. Faulkner, of Memphis, more recently of Charlotte. Mr. Faulkner assumed charge of the office on January 15.

Miss K. L. Francis, of Charlotte, is now with us.

SAN FRANCISCO, POSTAL.

Electrician W. C. Swain has gone to Butte, Montana, on official business.

Miss Winona Brown and George W. Parsons, all night chief, were married on Christmas.

Mr. Harry Reynolds has recovered sufficiently from an attack of pneumonia to be able to return to his desk.

Mr. James O'Neil is with us again after a month's subbing in the offices of the Pacific Mail Steamship Company.

Miss Alice Beede has resumed her station on the Seattle wire. She has been ill at her home during the last six weeks suffering from an attack of malaria.

W. K. Ward, of Honolulu, is spending a few weeks in this city.

Frank Seaman has returned from a short vacation.

Mr. Mike Dooley has been confined to his home for the last three weeks on account of sickness.

BALTIMORE, WESTERN UNION.

A. Bowersock, one of the oldest men here, for thirty-five years in the employ of the company in this city, has lost his wife by death.

The branch office formerly located at 202 Light street has been removed to 102 Light street, the change being made necessary by the city's purchase of property in order to widen the street.

The new office is a distinct improvement over the old, larger, lighter and better equipped and is much to the liking of its manager, Samuel T. Schutt.

W. F. Ganger, night chief, is convalescing from his long illness.

NEW YORK.**WESTERN UNION TELEGRAPH COMPANY****EXECUTIVE OFFICES.**

Among the recent visitors to the executive offices were: I. W. Copeland, manager at Troy, N. Y.; E. Ryder, manager at Hartford, Conn.; W. H. Doherty, manager at Albany, N. Y.; C. F. Ames, superintendent at Boston, Mass., and S. R. Crowder, electrician of the southern division at Atlanta, Ga.

Mr. John C. Barclay, assistant general manager and electrical engineer, and C. H. Bristol, general superintendent of construction, have returned to their offices after an absence of three weeks on a general inspection trip in the Southern States.

IN THE OPERATING DEPARTMENT.

Dr. Edwin Reynolds, aged sixty years, an old-time operator, who recently died in Brooklyn, N. Y., was at one time a member of this staff.

Mr. J. B. Hurd, Southern traffic chief, was the recipient of many hearty congratulations and a number of gifts on the occasion of his birthday a few days since. Mr. Hurd has just completed his thirty-eighth year of service in this office.

The weather of late has been so changeable that it seems to have played havoc among our traffic chiefs, Messrs. Lewis and Pearce and Mrs. May having been absent owing to sickness, while Chief Athearn of the Wheatstone force is still confined to his house with pneumonia. Mr. M. T. Durkin of the quadruplex department, is also seriously ill.

Messrs. W. Klitz, E. M. Matthews, D. C. Murphy and J. J. Carney have resigned.

Mr. E. T. Burrill, general traffic chief, is enjoying a well-earned rest, having gone to New England.

Mr. N. W. Lovegrove, of the Stock Exchange force, was married lately to Miss Brereton, of Buffalo.

Geraldine Louer, aged twenty years, died at her home in Brooklyn, January 21. Miss Louer was formerly employed at this office and was a daughter of the late Alfred F. Louer, a traffic chief, also of this office.

Alfred J. Bailey, aged fifty-eight years, connected with the bookkeeping department for upwards of twenty years, died on January 11.

The cable message bureau, which is under the management of Vice-President Thomas F. Clark, has undergone a complete renovation. The housewarming of the clerks of this department on Friday, January 19, was a unique and enjoyable affair.

Onnolee Lodge, No. 63, Order of Iroquois, made up mostly of telegraphers of this office,

held a public installation of officers at their rooms in Brooklyn, Friday evening, January 19. A pleasant social hour followed, enlivened by speeches by M. J. O'Leary, Senator W. L. Ives, and by musical selections and recitations.

Senator W. L. Ives is absent, owing to sickness, but it is hoped he will be able to resume his duties in a few days.

OTHER NEW YORK ITEMS.

Assessment No. 444 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of James Smith at Springfield, Mass.; Edward F. Welch at New York; Michael F. Gaffney at Brooklyn, N. Y.; John Kelly at Albany, N. Y., and John A. Sahlin at Hoboken, N. J.

The Commercial Telegraphers' Union of America, as exemplified through its New York local, proposes to hold a smoker and telegraphic tournament at the Manhattan Lyceum, No. 66 East Fourth street, on April 20 next. The proceeds of the affair, of which W. S. Riordan, 150 Nassau street, New York, is the chairman, are to be applied to the sick benefit fund of the union. The tournament, the details of which are being worked out with much care, will be conducted under the direction of George B. Pennock.

The annual report of the American District Telegraph Company of New York, shows a gratifying increase of business for the year 1905. There was a net gain in the revenue of \$18,011. The number of instruments in circuit on December 31 last was 32,234, with 1,587 miles of wire in operation and eighty-seven offices. At the annual meeting of the stockholders the retiring board of directors was re-elected.

Mr. John Brant, secretary of the old time Telegraphers' and Historical Association, is confined to his home in Brooklyn by illness. It will be probably a week or ten days before he will be able to resume his duties at his office. Necessary work incident to his position, however, will be attended to by him at his residence.

POSTAL TELEGRAPH-CABLE COMPANY.

EXECUTIVE OFFICES.

Mr. Fernand Emile d'Humy has been appointed electrician of the Eastern division, vice John F. Skirrow, in order that the latter may devote his entire time in the future to the duties of his position of associate electrical engineer. Mr. John T. Needham, assistant electrician of the Eastern division, has been appointed district electrician, vice F. E. d'Humy.

Mr. d'Humy was born in London, England, August 9, 1873. Coming to this country at an early age, he entered the service of this company at Boston, July 15, 1891. His aptitude for and grasp of electrical matters becoming manifest, he was recognized by the company when he was placed in charge of the dynamo plant in the Boston office. He gradually worked his way up to the position of electrician of the first district, Eastern division. His transfer to New York

occurred in May, 1904, when he was made electrician of the second district, Eastern division, a post he has since filled most acceptably. His present promotion is a further recognition of Mr. d'Humy's abilities as an electrician.

Mr. Needham is a native of London, Ont., where he was born in 1874. His telegraphic career began in the employ of the Great North Western Telegraph Company at London in 1897. Coming to New York he entered the service of this company as an operator, subsequently becoming wire chief in the operating department, and later assistant to Mr. J. F. Skirrow. Mr. Needham has been a careful student, has a well-informed and practical mind in the technicalities of his profession, and his appointment of district electrician, succeeding Mr. d'Humy, is a meritorious one.

At a meeting held at Salt Lake City, January 8, of the Postal Telegraph-Cable Company of Utah A. L. Thomas was elected president; W. S. McCornick, treasurer, and E. P. Gaylord secretary, the three, together with T. G. Webber, constituting the board of directors.

Mr. John F. Skirrow, associate electrical engineer of the company, is still absent on account of illness. He is reported, however, to be convalescing, and it is thought that he will be able to resume his duties at a comparatively early date.

The headquarters of C. B. Arrington, which have been located temporarily at Atlanta, Ga., have been transferred to Jacksonville, Florida.

IN THE OPERATING DEPARTMENT.

Edward Rhates has been transferred to the office at 8 Cortlandt street.

W. Conly has been added to the service department force.

Geo. Wichman, of the Western division, has been assigned to the office at 317 Greenwich street to help out during the heavy file of business there.

T. E. Heffren has been appointed manager of the 51 West Thirty-first street office. Mr. Heffren was chief operator at the Produce Exchange for a number of years. He succeeds H. E. Wilson, who has been transferred as manager to the 184 Franklin street office.

J. J. Finnerty is looking out for the all night traffic.

Willie Calhoun, check boy of the Western division, died January 24 after an operation for appendicitis. He was fifteen years of age and was the most popular boy in his division.

L. A. King is now located at the Evening World newspaper office.

H. C. Mitchell, H. Woolard and J. P. Gallagher have been added to the regular night force.

S. C. Dodd has been appointed general traffic chief.

C. W. Morrell is now day city chief.

J. Dupius has been appointed night city chief.

S. B. Haig, for a number of years general traffic chief, has been appointed assistant manager to S. E. Ostrom at the 20 Broad street office.

Mr. Williams a Solicitor for the Postal.

James P. Williams, night traffic chief of the Postal Telegraph-Cable Company, New York, has been appointed a business solicitor of the company for the Borough of Manhattan.

Mr. Williams was born in Philadelphia, April 9, 1866, beginning life like many another in the telegraph service as a messenger. This was for the Philadelphia Local Telegraph Company, September 24, 1877, when but a boy of eleven years. Ambitious to succeed he learned to telegraph and



JAMES P. WILLIAMS.

The Newly Appointed Business Solicitor at New York of the Postal Telegraph-Cable Company.

when fourteen years of age became an operator for the American District Telegraph Company of that city. In November, 1886, he entered the service of the Postal. With the exception of a few months, spent in the employ of the Pennsylvania Railroad at Philadelphia, Mr. Williams has since remained with the Postal company, (coming to New York in 1888), though serving on detail service on leased Postal wires. In this capacity he worked the leased wire of the Chicago Times-Herald and served for two years as chief operator of the Northern Associated Press and correspondent of the Buffalo Enquirer. In these positions Mr. Williams won distinction as a gilt-edged telegrapher. He was selected to represent the New York office of the Postal as a judge in the tournament held in Philadelphia in 1903.

Mr. Williams has devoted himself closely to his business, in which he has been rewarded by promotion; he is a man well informed as to the requirements of his company, and his selection for the position of solicitor is believed to be an admirable one.

There is a wide reading in the telegraph service of "Pocket Edition of Diagrams," etc. It is endorsed by experts, and no telegrapher who would gain a thorough knowledge of his business, told and illustrated in a manner clear and instructive to every reader, should fail to procure a copy. See advertisement.

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Serial Loan Association Election and Statement.

On January 16 officers of the Serial Building Loan and Savings Institution, of New York, were elected as follows: David B. Mitchell, president; James R. Beard, vice-president; E. S. Butterfield, treasurer; Edwin F. Howell, secretary; John B. Sabine and Augustus A. Rich, counsel and attorneys. Directors: John Brant, J. B. Taltavall, M. J. O'Leary, W. H. Jackson, T. A. Brooks, C. F. Leonard, G. W. Blanchard, G. H. Schnitgen, W. J. Quinn, M. S. Cohen, M. W. Rayens, J. P. Clolery, H. F. Hawkins, John A. Hill, H. C. F. Howell and F. C. Leubuscher.

The 41st semi-annual statement of the Serial Building Loan and Savings Institution for the six months ended December 31, 1905, is as follows:

Assets.	
Cash on hand.....	\$ 31,647.14
Loans on mortgage.....	428,286.40
Loans on shares.....	10,430.00
Real Estate.....	27,692.78
Contracts Real Estate.....	21,364.59
Advances to members.....	2,418.87
	<hr/>
	\$521,839.78
Liabilities.	
Installments	\$300,048.00
Earnings	55,678.46
Matured shares	63,800.00
Full paid shares.....	23,000.00
Borrowed money	11,037.31
Due on loans.....	33,200.00
Undivided earnings	12,348.07
Surplus	22,627.94
Real Estate Commission.....	100.00
	<hr/>
	\$521,839.78

New York, January 4th, 1906.

The semi-annual statement of the Electric Building Loan and Savings Association (having the same officers as the Serial Association) for the six months ended December 31, 1905:

Assets.	
Cash on hand.....	\$ 348.92
Mortgages	43,006.77
Stock loans	2,300.00
Real Estate	10,129.79
Advances to members.....	14.03
	<hr/>
	\$55,799.51
Liabilities.	
Subscriptions	\$53,154.18
Contingent fund	1,000.00
Suspense account	367.73
Undivided earnings	1,277.60
	<hr/>
	\$55,799.51

This is to certify that we have examined the books of the Electric Building Loan and Savings Association and find them correct.

W. H. DAVIS.

J. P. CULLEN.

Edison's First Work in Indianapolis.

Back in the telegraphic history about forty years ago Thomas A. Edison, then twenty years old, but an expert operator even at that age, wandered into Indianapolis, and it was here, says the Indianapolis Sentinel, that the first experiments of the now great electrician and inventor were made.

John F. Wallick, then as now superintendent of the Western Union Telegraph Company, gave the young operator a position, placing him in the branch railroad office in the Union Station. It was here that young Edison began his first experiments which have made his name one of the first in the age in number and importance of inventions. According to Mr. Wallick, Edison came to him from Michigan and was put to work at once. He remained three months. This was in 1866.

"There was nothing striking in Edison's early work," says Mr. Wallick. "He was a good operator, but nothing wonderful. His earliest attempts in the inventing line were made while employed under me, but at that time I did not take his work seriously. One day, soon after beginning work, Edison came to my office and asked for some old instruments, sounders and keys. He said he wished to experiment with them, and I let him have them.

"One night some time after that I was in his room at the Union Station and saw he had the whole batch rigged up and was working over them every spare minute he had.

"What are you doing with those things?" I asked him.

"Just experimenting," he answered. "I believe I can make a duplex and quadruplex instrument that will work right.

"He left Indianapolis soon after that, first going to Boston and then to New York City. It was while in the East that his fame began to grow. Every once in a while I would see little notices in the papers about a fellow named Edison who was working wonders in the telegraphic line, and, of course, my interest was aroused. So I looked into the stories and found that he was the same fellow who had been experimenting in Indianapolis. I am convinced that the first experimenting he ever did was in the railroad office in Indianapolis."

To Season and Preserve Telegraph Poles.

Seven electric companies doing business in California have made arrangements with the Government forest service for a thorough co-operative study of seasoning and preserving telephone and telegraph poles. The work centers at Los Angeles, Cal., and an agent of the forest service will immediately take up the preliminaries there.

Oregon cedar is the tree chiefly used in that region for poles. The experiments will be devoted not only to the handling of this wood, but

to a search for satisfactory substitutes among other species. Possible substitutes are western yellow pine, incense cedar, redwood and eucalyptus.

The comparative value of these will be studied, and those which promise best will be subjected to such seasoning and preservative treatment as the forest service may recommend. In general, the wood will be handled in much the same manner as that which has proved successful in other work done by the service.

Thomas A. Edison is somewhat of a joker. A correspondent was looking over the inventor's laboratory when his eye was caught by a curious model. It looked like a cradle with some kind of telephonic attachment. "What on earth is that?" inquired the visitor. "I hope to make my fortune from that invention," said Edison gravely. "It is a motor to run by sound. You attach it to a cradle and the louder the baby cries the faster the cradle rocks."

Montreal, Que.

(Communicated.)

The largest city in Canada is Montreal, now claiming a population of about 400,000. It is the head of navigation on the St. Lawrence River for ocean liners, the big transatlantic steamers land directly at the wharves on the city's river front. Nearby is the famous resort of American tourists, the Thousand Islands. From Montreal, it is a night's ride to Toronto or New York; four hours to Ottawa, the Dominion capital, and six hours to Quebec.

The city is an important railroad centre and the most important relay point of the Great North-Western Telegraph Company. From Montreal the company's lines connect with offices throughout the Province of Quebec, and by direct wire service to the Maritime Provinces, Ottawa, Toronto and Winnipeg, as well as Boston, New York, Chicago and three cable stations. Montreal is the western terminal of the Intercolonial Railway, operated by the Dominion Government. In Montreal is also the head office of the new Canadian transcontinental railway, the Grand Trunk Pacific.

Montreal has its own Board of Trade and Stock Exchange, both boards now occupying new and very handsome buildings. The Great North-Western Telegraph Company is represented in both by a special branch office. In addition, the company maintains a ticker service distributing the New York markets as well as the quotations of the Montreal and Toronto exchanges.

Whether resident or visitor in Montreal, messages should be marked via Great North-Western as the company has a large number of exclusive offices, and communicates, through its connecting lines, with upwards of 49,000 places in Canada, the United States and Mexico.

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Buyers of Hudson's Word Register, the standard and most simple and accurate device for counting the words written upon the typewriter, will consult their convenience by communicating with any of the following named authorized agents, preferably the one nearest to their place of residence:

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Gold and Stock Life Insurance Association Holds Annual Meeting.

The Gold and Stock Life Insurance Association held its twenty-eighth annual meeting in the Western Union Telegraph Building, New York, on January 15. It was well attended, and the interest shown by those present in the welfare of the association was evidenced in the remarks recounting its history and referring generally to its good work and the success it has achieved.

Under the association's plan of payment, by monthly installments of \$50, until the full amount of the certificate is paid, \$100,000 has been distributed among the beneficiaries of the one hundred and sixty-nine deceased members, thus giving each the advantage of a monthly income, and at a time when only those who received it could appreciate its full value.

President Atkins commended the fraternal spirit that prevails in the association and urged strenuous efforts to increase the membership and revenues to the end that a satisfactory reserve fund may be accumulated.

The total membership on December 31, 1905, was 1,163, while the gain in assets during that year amounted to \$1,219.60.

The auditors' report showed that there was now on deposit \$128.73, a reserve fund of \$21,086.25, and that the market value of the securities over their cash was \$833.75, thus showing the assets to be \$22,048.73. The death claims payable, but not yet due, foot up to \$2,700.

Officers were elected as follows: George W. E. Atkins, president; Gardner Irving, vice-president; W. J. Dealy, secretary; Lewis Dresdner, treasurer; Executive Committee, G. W. E. Atkins, Gardner Irving, Herbert Smith, Lewis Dresdner, W. J. Dealy, Michael Breslin, Charles Shirley, T. A. McCammon and Albert J. Driver; Auditing Committee, M. J. O'Leary, F. J. Nurnberg and J. J. Frederick.

Book Notice.

The twelfth edition, carefully revised and enlarged, of "The Arithmetic of Electrical Measurements," by W. R. P. Hobbs, R. N., has made its appearance, being published simultaneously in London and New York. This excellent work, designed primarily for the use of young students of electricity who desire to obtain a clear and concise application of Ohm's law, the foundation of all electrical measurements, fully maintains its past reputation. In a note the author calls the attention of students in telegraphy especially to Chapters XI. and XII., which treat at length and in detail the questions of resistance of conductors and the electric lighting and transmission of power. The price of this book is fifty cents, which includes postage. Orders should be addressed to J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

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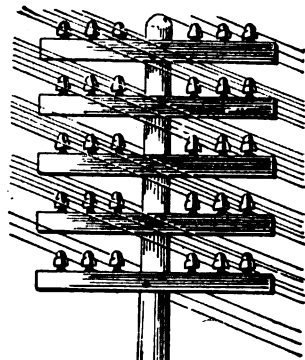
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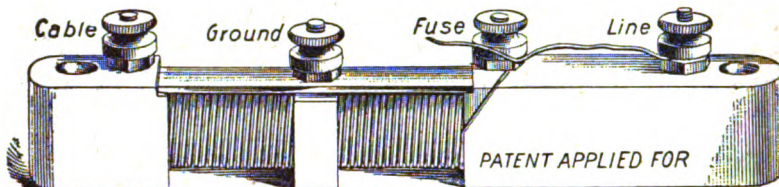
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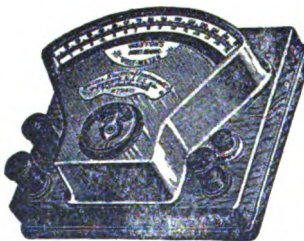
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VOL. XXIV., No. 4.

NEW YORK, FEBRUARY 16, 1906.

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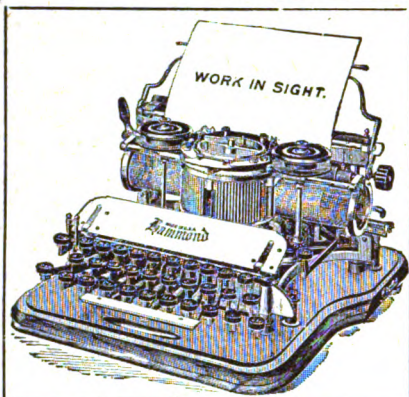
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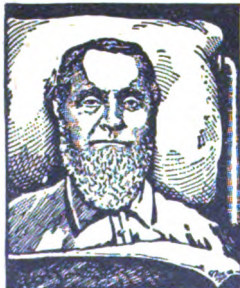
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No. 4.

NEW YORK, February 16, 1906.

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SOME POINTS ON ELECTRICITY.

The Dynamo—Series, Shunt and Compound Wound.

In Three Parts—Part II.

BY WILLIS H. JONES.

The preceding installment of this article was devoted to a description of the manner in which the respective coils of series, shunt and compound wound dynamos are wound.

In this issue we shall endeavor to show why the three methods of winding are necessary and how alterations in the ohmic resistance of the external circuit cause the respective machines to give electric outputs in as many different forms.

Now, if the total ohmic resistance of a circuit, or that of the joint resistance of a number of circuits, would remain permanently unaltered there would be no positive necessity for the different methods mentioned. Unfortunately, however, while individual circuits may remain practically the same at all times, the number of such circuits in use at different periods may alter greatly.

As one machine, as a rule, feeds a great many such circuits, the "external circuit" of a dynamo

really means the equivalent of one circuit possessing a total ohmic resistance of a value equal to that of the joint resistance of all the individual circuits it happens to be feeding current to at the time. If the circuits are telegraph conductors, or electric light circuits, some of which are rapidly being opened and closed, or where lamps are almost constantly being cut in or out, it is obvious that the joint resistance of the entire system is altering in value every moment. As the volume of current demanded by the individual circuits must always remain unaltered, it follows that if it is required to supply more than one branch circuit it must be so constructed as to yield additional quantities without altering, to any appreciable extent, the value of its electromotive force. Hence we have what is called "constant pressure" dynamos. These are the shunt, and the compound machines. On the other hand, when one machine is assigned to furnish current to a number of lamps connected in series, that is to say, feeds but one continuous electric light conductor, it must provide but one volume of current at all times, regardless of whether one or one hundred lamps happen to be cut in at any period. Here we find the demand for a "constant current" producing machine. The series wound dynamo fills this requirement. Let us see how these ends are attained.

Before proceeding further, however, a few remarks concerning the manner in which the electromotive force in a dynamo is developed and regulated may help to a clearer understanding of the description to follow.

The number of volts a dynamo produces depends upon the number of magnetic lines of force in the "field" that the armature cuts across per second of time as it rotates between the large metal polepieces of the magnet. Hence it follows that the voltage may be increased or decreased in several different ways. First, with a constant strength magnetic field between the polepieces, the voltage may be increased by merely increasing the number of revolutions per second. For example, if an armature rotating in a certain magnetic field at a given rate of speed per second, created 100 volts, it would create 200 volts from the same field should the speed be doubled. Or the electromotive force could be doubled in value by doubling the strength of the field without altering the speed. In each case the armature would cut double the number of lines per second.

It could also be increased by increasing both the speed and the field. Decreasing the value of any or all the factors would, of course, decrease the voltage in like manner.

Again, as there is a maximum and a minimum point in the field where the number of lines of force are greatest and least, it follows that if the brushes of the machine are shifted between these points the armature coil will only cut that proportion of the total number which equals the percentage of brush displacement. Hence, the pressure may be varied by merely altering the position of the brushes on the commutator.

Now, the object of the various windings in the different types of machines mentioned in this article is to compel the unavoidable alterations in the volume of current flowing into the external circuits to instantly either create or preserve, as the case demands, the exact value of electromotive force in the machine that is required to compensate for any temporary loss or gain in the ohmic resistance of the circuit the dynamo feeds. Were it not for an automatic regulating device of some kind the sudden cutting in of a considerable number of electric lights, for instance, would immediately reduce the illuminating power of all to a mere glow. Let us now see how the windings preserve normal conditions. We will begin with the operation of a series wound dynamo furnishing current for a series arc light circuit.

An arc lamp demands about 9 amperes of current and it requires about 45 volts of electromotive force to produce that volume in the lamp without allowing for any "drop" of electric pressure due to the resistance of the conducting wire. As the conductor connecting the lamps together, such as in a street circuit for instance, obviously offers some resistance, let us say 50 volts per lamp will be required for each additional lamp connected in series. Hence, the electromotive force of the machine must be increased or diminished 50 volts for each additional lamp lighted or extinguished, respectively. Otherwise the volume of current flowing would not remain at the normal value of 9 amperes. Ten lamps in series would thus require 500 volts when all the lamps were lighted. If, say, 5 lamps in such a series should be extinguished it follows that owing to the resistance of the circuit thereby being reduced one-half of its total ohmic value, the volume of current which would flow, should the electromotive force of the machine remain unaltered, would be doubled. To prevent this increment of current volume the voltage of the dynamo must be reduced in like ratio.

Of course, the resistance value of the external circuit could be maintained constant at all times regardless of the number of lamps lighted at any given period by providing a shunt around each lamp which would substitute as much resistance when a light is extinguished as the lamp contains.

By this method, however, the cost in energy to the power company for maintaining one light in a ten-lamp series circuit would be as great as if the other 9 lamps were cut in and in active operation, for the reason that the same number of watts would be expended in the circuit in either

case. The only difference would be that if but one lamp was cut in 9 per cent. of the electric energy expended would be absorbed by the dead resistance shunts and but ten per cent. employed usefully in furnishing light.

As previously stated the alterations in the value of the electromotive force must be accomplished by shifting the position of the brushes on the dynamo. As a matter of fact, however, the necessary degree of displacement is not as great as one would naturally expect on first thought, because of another factor that must be taken into consideration. This factor is what is termed armature reaction. As the current flows through both the armature and the field magnet coils the resulting reaction which takes place while the current is actually increasing or decreasing in volume has the effect of partially neutralizing or altering the normal number of lines of force flowing between the magnet polepieces as well as distorting and displacing their density at certain points.

For this reason the strength of the field is not only prevented from being increased by an increment of current, but is actually weakened, and to help along the good work, the distortion which takes place shifts the denser portion of the field away from the brushes, thus reducing the electromotive force and requiring but a comparatively slight displacement of the brushes to complete the operation.

There are various methods of moving the brushes, but the following will show the general principle: An electro-magnet is connected directly in the lamp circuit and so arranged that any alteration in the volume of current flowing in the external conductor will cause its armature lever to engage with the rocker-arm of the brush holders and shift it backward or forward, according to whether the current is increasing or decreasing, until the normal value of current is restored. The movement then ceases and the magnet no longer acts, but remains on guard ready for instant operation in the event of further alterations in the external circuit.

(To be continued.)

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, Inc., June 1 to July 16, Inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, Inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, Inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power From the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16.]

The Cable.

Mr. George Gray Ward, vice-president and general manager of the Commercial Cable Company, New York, will on February 17 sail on the steamer Celtic and go by way of Fayal, Azores, where the Commercial Cable Company has a station, and the Mediterranean to China and Japan. He expects to arrive at Shanghai in time to witness the landing of the shore end of the Manila-Shanghai cable. His visit to China and Japan is in the interest of the Commercial Pacific Cable Company. He will also visit Manila, Guam, Midway and Honolulu on his way home across the Pacific. Mrs. Ward and his daughter, Mrs. Hough, accompany him. He expects to return home in July.

Mr. Daniel Coath, superintendent of the Commercial Pacific Cable Company at Guam, has been transferred to Shanghai, China, where he will open the station for the company and act in a similar capacity. Mr. Coath's place at Guam will be filled temporarily by Mr. H. F. Harrington, superintendent at San Francisco, who has gone to Guam on special duties in connection with the laying of the cable between Guam and Japan. Mr. P. McKenna, the assistant superintendent, will act in Mr. Harrington's place at San Francisco during his absence. Mr. E. B. Hibberdine, operator for the same company at San Francisco, has gone to Midway Island station, where he will become a member of the working staff.

The Central and South American cable, extending down the west coast of South America, has broken, apparently in two places, to the north and south of Buenaventura, United States of Colombia.

Fanning and Washington Islands in the South Pacific are being offered for sale under instructions from the Registrar of the British High Commissioners' Court for the Western Pacific. Fanning Island is the mid-ocean repeating station of all the British Pacific cable connecting Canada and Australia.

The stockholders of the Mackay Companies will hold their annual meeting in Boston on February 15. It has just become known that T. Jefferson Coolidge, Jr., and John I. Waterbury, who were voting trustees of the Mackay Companies, are no longer connected with that concern. When the voting trust was abandoned and stockholders got a voice in the management, some months ago, Messrs. Coolidge and Waterbury did not go upon the new board of directors. As both Mr. Coolidge and Mr. Waterbury are directors of American Telephone, their close connection with the Mackay Companies has been the subject of much comment, as indicating the close alliance between the telegraph and telephone companies.

Consul-General Dietrich writes from Guayaquil that the Central and South American Telegraph Company has secured an improved contract with

the government of Ecuador covering a submarine cable. The company agrees in return to lay a cable into Esmeraldas Province.

The cables remaining interrupted week ending February 10, 1906, are as follows: Cayenne-Pinhoiro, interruption announced August 13, 1902; Port Arthur-Chefoo, interruption announced Mar. 9, 1904; Jamaica-Colon, interruption announced January 9, 1905; Cadiz-Teneriffe, interruption announced July 20, 1905; Martinique-Porto Plata interrupted October 30, 1905; Santa Cruz-Ponce, interrupted December 13, 1905; Curacao-Venezuela, January 12, 1906; Bolama-Bissao, interrupted January 19, 1906; Juneau-Skagway, interrupted January 26, 1906; Panama-Buenaventura and St. Elena-Buenaventura interrupted, cutting off communication with the United States of Colombia, January 31, 1906; Jamaica-Ponce, interrupted February 1, 1906; Nagasaki-Vladivostok, interrupted February 3, 1906.

Personal Mention.

Hon. Senator George A. Cox, of Toronto, president of the Canadian Bank of Commerce and one of the leading business men of Canada, began life as a telegraph operator. Recently while in New York, he called on the now venerable Orrin S. Wood, under whom he was employed in the service when the latter was at the head of the Canadian telegraph system over half a century ago, since which time the two men had not met. Mr. Wood recalled the fact that he had appointed Mr. Cox to the Peterboro, Ont., office more than fifty years ago and needless to say the meeting was a most friendly one. Mr. Wood gave the Senator a cordial invitation to visit him during the coming summer at his farm in Orange county, New York, promising him a drive behind a pair of fast horses, through the lovely country of that locality. Mr. Wood is now in his eighty-ninth year. He received his instructions as a telegraph operator from Professor Morse, whose first pupil he was, and may now be considered as the oldest living operator, and he still takes a lively interest in telegraph affairs both in Canada and the United States, and is a frequent and welcome visitor at the office of TELEGRAPH AGE.

Dr. George R. Fowler, the eminent Brooklyn surgeon who died February 6, aged fifty-seven years, when but a lad of fifteen or sixteen became a telegraph operator in the railroad office at Jamaica, L. I. Although he soon quit the dots and dashes for a professional life, he never lost his interest in telegraphy. It is related that, long before the advent of the telephone system, he, in connection with William H. Baker, now vice-president and general manager of the Postal Telegraph-Cable Company, and W. K. Applebaugh, a former well-known old-time New York telegrapher, organized a plan by which direct telegraphic communications were established connecting about seventy drug stores and doctors' offices in Brooklyn. Later this service was sup-

plemented by a crude but effective telephone system. In many emergencies Dr. Fowler used his skill as a telegrapher in getting ambulances, nurses or physicians.

Col. B. F. Montgomery, for many years in charge of the telegraph department at the White House, Washington, D. C., and who a year ago was transferred to California for duty in the Signal Service, has been placed on the retired list.

Mr. Y. C. Tong, chief superintendent of the Imperial telegraphs of China, who is one of the party of high Chinese officials now in this country on a tour of investigation, while in New York City recently took occasion to call upon the officials of the telegraph.

Mr. Geo. H. Albee, a well-known, old-time telegrapher, of Windsor, Conn., who for some time past has been using a crutch on account of knee trouble has, we are glad to say, been able to discard this appendage, and is in a fair way to entire recovery. Mr. Albee was a recent New York visitor.

Mr. James P. Bradt, a former well-known New York telegrapher, for many years identified with The Associated Press and The United Press, but since 1897 in the service of the Columbia Phonograph Company, at Philadelphia and Baltimore, and for the past three years at Berlin, Germany, has been appointed manager of the company's sales depot in London, England.

The appointment of Mr. Hugh P. Trainor as chief district engineer of the Transvaal Government telegraph service, at Pretoria, has been confirmed.

The Railroad.

The Delaware, Lackawanna and Western Railroad Company during the past three years have handled the greater part of their message communications (telegrams) over their telephone lines, and they now have complete telephone service throughout all yards and terminals, including blind sidings or passing tracks, which enables second-class trains to obtain moving orders by telephone. At each end of these sidings a box containing the telephone is placed, which is opened by a regular switchman's key. Formerly it was necessary to have a telegraph operator accompany each wreck train, but now wrecking cars are equipped with telephone service, and immediately upon arrival at a wreck, the wrecking foreman or train master can by means of a sectional pole with wire connections at once place himself in communication with the division train dispatcher. It is the intention of the Lackawanna management to extend its telephone service to cover all branch lines, as it has been clearly demonstrated that business communications can be handled more expeditiously by telephone than by telegraph. The Lackawanna now have six hun-

dred of its nine hundred and fifty miles of road equipped with metallic telephone circuits, using over one thousand telephones with ten private branch exchanges, located at convenient points. The remaining three hundred and fifty miles will be equipped with telephone service by May 1. Each station along the line in addition to the railroad company's own service, is equipped with the service of the Bell Telephone Company, which can be used in case of interruption to the lines of the railroad company. These improvements have been carried out under the direction of L. B. Foley, superintendent of telegraph of the Lackawanna road.

A bill has been presented to the Virginia Legislature which prohibits the employment as telegraph operators of any persons under eighteen years of age and to require an examination as to his qualifications.

Mr. T. W. Crowley, superintendent of telegraph of the Delaware and Hudson Company, Albany, N. Y., has resigned his position and will return to the Erie road, from which he came with A. J. Stone when he became general superintendent of the road.

Some time ago we referred to the fact that a paragraph was going the rounds of the newspaper press to the effect that the Pennsylvania Railroad was placing its telegraph wires between New York and Washington underground. We took occasion to state that the newspaper paragraphers had no doubt confounded the Pennsylvania Railroad Company with the American Telephone and Telegraph Company, which has been actually engaged placing its wires underground between the points mentioned. Now it appears that the original paragraph referred to is being given further circulation in railroad trade papers, which, of all journals, should be careful in such utterances. In referring this matter recently to D. C. Stewart, superintendent of telegraph of the Pennsylvania Railroad Company, that gentleman had this to say on the subject: "We have at various times in the past looked into the question of the feasibility of putting the wires on some of our heavy pole lines underground and have made figures showing approximately the cost of doing so on certain portions of our line, notably our New York division between Philadelphia and Jersey City and portions of our main line from Philadelphia westward, but with the exception of the lines in the immediate vicinity of the larger cities, the estimated cost of any such extensive underground installation has always appeared to our people to be prohibitive and at the present time no such proposition is contemplated. Between Philadelphia and Washington we have just erected a brand new pole line, which will unquestionably answer our needs on this portion of the railroad for several years to come. The item referred to seems to have obtained very wide currency."

Mr. J. C. Browne, general foreman of telegraph for the Iron Mountain, has received notice and

has made his arrangements to handle the telegraph service on the White River division from Diaz, Arkansas, to Carthage, Missouri, a distance of 268 miles.

Mr. W. W. Ryder, joint superintendent of telegraph of the Chicago, Burlington and Quincy Railway Company, Chicago, accompanied by his wife, was a recent New York visitor.

The Southern Pacific Company is about to begin the construction of a passenger station at Los Angeles Cal., to cost \$500,000. The plans provide ample space for telegraph and telephone facilities.

Mr. G. A. Cellars, of Pittsburg, superintendent of telegraph of the Pennsylvania Lines West of Pittsburg, was a recent New York visitor.

Announcement is made that Charles E. McKim, formerly superintendent of telegraph of the Pennsylvania lines and later superintendent of transportation of the Rock Island Railroad, has been appointed general inspector of transportation of the Louisville and Nashville Railroad, with headquarters at Louisville.

Mr. S. L. Van Aken, wire chief at Ravena, N. Y., has been promoted to be assistant superintendent of telegraph of the West Shore and the New York Central railroad companies, with headquarters at Syracuse, N. Y. Mr. A. B. Taylor, the superintendent of telegraph of both systems, whose headquarters are at Weehawken, N. J., is devoting a considerable portion of his time to the electrification of the New York Central roads in the vicinity of New York, hence the establishment of the office of assistant, rendered necessary by Mr. Taylor's increasing duties.

Death of William B. Clum.

William Buell Clum, for many years a member of the operating staff in the main office of the Postal Telegraph-Cable Company, New York, and one of the oldest telegraph operators in active service in this country, died on January 29 at his home in Jersey City, N. J.

Mr. Clum was born in Troy, N. Y., in 1827, and was therefore in his seventy-ninth year. Graduating from the Lansingburg, N. Y., academy in 1846, his first business employment was that of a postoffice clerk at Troy. While holding this position he learned telegraphy, and in 1848 became an operator in the telegraph office in that city. His associates at the key were A. B. Cornell, who afterwards became Governor of the State; William Clum Buell, a relative and namesake; W. H. Collins, M. V. B. Finch and B. F. Fuller. In 1849, Mr. Clum removed to New York, shortly thereafter going to Portland, Me., there finding employment with the Maine Telegraph Company, whose merger with the Western Union Telegraph Company was lately referred to in these columns. In 1851 Mr. Clum, with others, went to Mexico, with the avowed purpose of establishing a telegraph company in that country,

but a charter being refused he returned the following year to Portland, where in 1853 he was married. From 1854 to 1857, he resided in Boston, afterwards coming to New York, where he remained until 1862, when he was sent by the Western Union Telegraph Company to take charge of its office at Halifax, N. S. At this point he acted as agent for The Associated Press. In 1868 he returned to New York, going the following year to Washington, D. C., in the employ of the Franklin Telegraph Company. Two years later he once again went back to the metropolis to take a position in the main office of his company, at 11 Broad street, a position he retained until the merger of the company with the Western Union Telegraph Company, the latter continuing him in its service until 1883. At this time Mr. Clum connected himself with the Postal company, an association he had since continuously maintained.

OBITUARY.

George Stoker, an old-time cable "packer," and who was prominent in telegraph circles in New York City fifty years ago, being identified at that time with the American Telegraph Company, died in Brooklyn on February 7, aged eighty-two years.

Howard D. Huntsman, aged forty-four years, formerly an operator at Philadelphia, Pa., died at Richboro, Pa., January 27.

Hiram C. Shorey, aged sixty-seven years, an operator and merchant, died at Newankum, Washington, on January 23.

Walter C. Neele, aged thirty-two years, of the Postal Telegraph-Cable Company, San Francisco, Cal., left there January 20 on the ill-fated steamer Valencia, to accept a position with that company in Seattle. On the night of the 22d, the steamer was wrecked on the west coast of Vancouver Island, and Neele, with more than a hundred others, lost his life. Mr. Neele, who was a native of Michigan, served for several months in the Signal Corps in the Philippines, and was a well-known and expert operator.

George Heath, an old-time telegraph operator, employed at the state capitol, Albany, N. Y., during the Civil War, died at Lee, Mass., on January 31.

H. B. Benson, a telegraph operator, aged thirty-three years, employed by the brokerage firm of Armstrong and Ganong, Memphis, Tenn., committed suicide January 27, the act being attributed to poor health.

Daniel A. Williams, aged sixty-seven years, an old-time operator, well known in the West, died recently at Kansas City, Mo. He was a native of Ithaca, N. Y. He served as a military operator under Gen. Grant in Northern Missouri, at the outbreak of the Civil War.

Charles A. Wardwell, fifty-two years of age, a Boston operator, died at his home in Cambridge, Mass., February 2.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mrs. F. W. Adams has been appointed manager at Gallitzin, Pa., vice A. J. Zenz, resigned.

Miss Grace Morris has been appointed manager at Meyersdale, Pa., vice W. W. Stiver, resigned.

Mr. R. L. Adams, manager of the Gadsden, Ala., office, has resigned to devote his entire time to his numerous outside enterprises.

Mr. J. H. Lang, manager at Lynn, Mass., has been appointed manager at Fitchburg, Mass., vice W. E. Baker, resigned to go with a local broker.

Mr. A. A. Gargan, assistant superintendent at Denver, Col., is acting manager of the office in that city until an appointment can be made to succeed Mr. F. M. Duncan, who has resigned to accept the general agency of the Union Pacific Coal Company, with headquarters in that city.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. T. C. Hughes, manager of the Bay City, Mich., office, has been advanced to the management of the Detroit, Mich., office, vice J. C. Smith, resigned to enter other business.

Mr. D. McNichol, of the Superintendent of Telegraph's office, Northern Pacific Railroad, St. Paul, Minn., has been appointed to a position in the Butte, Mont., office.

Recent Telegraph Patents.

A patent, No. 811,435, for a telegraph or telephone pole, has been taken out by James M. Perdue, Matthews, Ga. Mechanical features of a three-legged steel telephone or telegraph pole are set forth.

A patent, No. 811,247, for an electrically operated typewriter, has been issued to Willis J. Rousel, New Orleans, La. Combined with a motor is a shaft operated by the motor. A type-wheel is loosely mounted upon the shaft with means for locking the wheel to the shaft. Teeth upon the wheel, a pawl normally engaging one of the teeth, a magnet and an armature for the magnet, the armature being connected to and adapted to operate the pawl and locking means complete the apparatus.

A patent, No. 811,127, for telegraphy and telegraph apparatus, has been secured by John Burry, of New York, assignor of one-half to James E. Munson, New York. The combination consists of a series of members from which one is to be selected, a series of selectors determining the member to be selected, a magnet controlling the selectors according to the impulses received and means for sending impulses to the magnet varying in combination with periods of rest according to the member to be selected.

A patent, No. 810,878, for a selective call for telephones and telegraphs, has been granted to William Palmer, Jr., of Rincom, N. M. A selective telephone and telegraph call comprises a subscriber's instrument having a local battery and two local circuits, a step-by-step escapement and a bell switch. Two electro-magnets are arranged one in each local circuit, one for working the step-by-step escapement and the other for adjusting the bell switch to ringing position. A vibrating shunting relay sends the local-battery current through either electromagnet by a reversal of the main-line current and a switch under the control of the subscriber enables him to exclusively introduce his telephone into circuit for private communication.

International Conference on Electrical Units.

Although no details have yet been published concerning the conference at Berlin last October between the representatives of different governments on the subject of electrical units, yet we understand that an informal conference was held and that conclusions were reached. This conference, it will be remembered, says the *Electrical World*, editorially, was called in view of the resolution of the Chamber of Delegates, at the St. Louis International Electrical Congress, to the effect that the difference between the legalized electrical units in different countries were such as to warrant the appointment of an international commission on the subject. We believe that the conference decided in favor of selecting the international ohm in mercury, and the international ampere, determined by the silver coulomb-meter as the fundamental primary concrete standard electric units. Also that the Weston cadmium cell containing solid hydrate of cadmium sulphate should be the standard cell, whose e.m.f. should consequently be determined by reference to the primary standard ohm and ampere. Also that an official conference should be called within a year to bring the legalized electric units in accord among the various governments represented.

It was hoped in this country that the two primary fundamental concrete standard units would be the volt and the ohm, because the electrolytically determined ampere involves a process and does not admit of continuous existence or substantial embodiment. However, that is really a matter for physicists to decide upon. The secondary standards of our national laboratories will no doubt consist of alloy-wire ohms, cadmium cells, and electro-dynamometer ammeter balances. Our tertiary standards in engineering laboratories will be cadmium or Clark cells and alloy-wire resistance coils. If our standard cells are marked with the same voltage, at standard temperature, to one part in two thousand, and our coils with the same resistance to one part in five thousand, no matter to what national laboratory they are sent for calibration, we believe that the most exacting requirements of the electrical engineer will be fully met for the present.

The London-Glasgow Underground Telegraph System.

The approaching completion of the London-Glasgow underground telegraph system may be said to mark an epoch in the history of long-distance underground telegraphs. The pipe line is now complete and all the cable is safely delivered and most of it is in position, but the final jointing up and testing is still to be done.

The London-Birmingham section of the cable is a thirty-eight-pair paper-insulated lead-covered cable, the conductors weigh 150 pounds per mile, their capacity is 0.065 mf. per mile, and the diameter over the lead is approximately 2.6 inches. In the extensions from Birmingham to Warrington and from Warrington to Glasgow, different types of cable are used, and they contain a greater number of wires. The external diameter of both cables is not much greater, however, and a three-inch cast-iron pipe with socket joints is used exactly similar to that employed on the first section. The makers of the cables were the British Insulated and Helsby Cables (Limited), W. T. Henley's Telegraph Works Company, Messrs. Siemens Brothers and Company, and the Western Electric Company.

On the Birmingham-Warrington section, the cable contains thirty-seven pairs of 100-pound conductors, laid up in the usual way with one pair in the center and successive layers of six, twelve and eighteen pairs. Over this, however, comes a layer of twenty-nine single copper seventy-pound conductors, each protected individually by a screen of copper foil over the paper insulation. This screening tape is of soft 100 per cent. conductivity copper, three mils thick and 0.3 inch wide, it is laid on as a tape, with a thirty per cent. overlap in the usual manner, and the diameter over the copper tape is 2.25 mils. The paper used for the insulation is of the strong variety customarily employed for this purpose, and it was specified that a strip one inch in width should be able to support a weight of four pounds for each mil thickness of the paper, the minimum thickness of the actual paper employed to be six mils. The same paper is used for insulating the pairs and the single conductors, but in the former case different colors are employed to ensure correct joining and easy identification of the wires. Between each layer of pairs there is a spiral wrapping of paper three mils thick, but there is purposely none over the screened single conductors, so that the copper around the latter should come in direct contact with the lead. The lead sheathing is 150 mils thick, and the diameter of the whole cable is 2.7 inches. The following maximum capacities and minimum insulation resistances at 50° F. are specified:

Single Conductors.—0.12 m.f. per mile; 500 megohms per mile after one minute's electrification.

Paired Conductors.—0.06 m.f. per mile (wire to wire, others insulated); 5,000 megohms per mile

(between one wire and all others' earthed) after one minute's electrification.

In the cable from Warrington to Glasgow, the conductor-pairs are laid up on the Dieselhorst-Martin principle. The 100-pound conductors, after being insulated with paper, are laid up in pairs, then the pairs are "twinned" together into a two-pair cable, and finally a pair of these two-pair cables are laid up together. There are seven of these sets of four pairs in each cable, and they are surrounded by twenty-nine screened seventy-pound conductors as in the Birmingham-Warrington cable, but first six ordinary pairs of 150-pound conductors are laid in to fill up the interstices. This cable gives sixty-five circuits. The insulation and lead sheathing are similar to those in the Birmingham-Warrington section. A maximum wire-to-wire capacity of 0.06 and 0.065 m.f. per mile was specified for the 100-pound and 150-pound pairs respectively, 0.12 m.f. per mile between each screened single conductor and all the others earthed. The object of laying up the pairs in the manner described is in order that they may be employed in parallel if the equivalent of a heavier conductor be required. For instance, if two of the pairs are used in parallel, the equivalent of a 200-pound copper conductor is obtained, but the capacity is less than if two pairs of an ordinary twenty-eight-pair cable were used in parallel.

The outer screened single wires of the cables are employed for ordinary telegraph traffic, in many cases for comparatively short distances only, while the paired wires serve for high-speed transmission on the longer distances. Although there is little doubt that the cable might be employed for telephone traffic with the addition of "loading" coils for the longer distances, it is primarily intended for telegraphic purposes.

The total distance from London to Glasgow is 409 miles. London-Birmingham 117 miles, Birmingham-Warrington 80 miles, Warrington-Carlisle 117 miles, Carlisle-Glasgow 95 miles. As already mentioned, the cable is laid in a three-inch cast pipe, lead-jointed in the usual manner. Each conductor is jointed by a soldered copper sleeve, and the joint is insulated with a paper sleeve. The insulation is dried by placing a brazier at each side of the joint until no more moisture is driven off, and the test for this is to hold a mirror above the joint and to notice whether it is dulled with water vapor. A lead sleeve previously passed over one end of the cable is then pulled over the joint, and a plumber's "wiped" joint is made on each side. The cable is laid for the greater part in 150-yard lengths south of Carlisle, and 220-yard lengths north of that point. At about every half mile an air nozzle is soldered into the lead sleeve of the joint, so that compressed air can be passed through the cable to dry out faults and to test it. After each joint is completed, the lead "wipe" is covered with soap suds, and the joint is tested with compressed air at twenty-five pounds per square inch

pressure. The usual manner of protecting the joint and air nozzle is with a split cast iron sleeve, but under roadways or pavements the excavation of which would be expensive and troublesome, a regular street box with a cover is employed. At intervals of five miles there are test pillars containing cable-connection boxes.

For drying out the cable and for testing purposes, a dessicating pump, driven by a portable petrol engine, is used, and this is mounted on a lorry. The engine is not used to drive the lorry, and is permanently connected to a "Boreas" air compressor. This supplies compressed air to a receiver, and the air is delivered to the cable through four cast iron cylinders containing calcium chloride. The engine is supported on springs from the lorry axles, but four bolts are provided to take the weight of the engine off the springs when running. The normal speed of the engine is 700 revolutions per minute, and the compressor runs at 300 revolutions, and can supply ten cubic feet of air at thirty pounds per square inch pressure when running at this speed.—The London Electrician.

Pension Bills for the Military Telegraphers.

As our readers are aware, the friends of the Society of the United States Military Telegraph Corps are making an earnest effort to obtain from Congress a recognition of the rights of the old veterans, to the end that individual members may be placed on the pension roll of the country, in honorable juxtaposition with the old soldiers among whom and for whom they served during the Civil War.

The bill before the Senate, numbered 2165, which reads as follows:

Extending the provisions of the pension laws of the United States to persons engaged in the operation and construction of military telegraph lines during the war of the rebellion.

was passed unanimously on February 8.

A bill identical with it is No. 3178 before the committee on Invalid Pensions in the House of Representatives. An early hearing is promised.

It behooves all parties and their friends interested in the measure to communicate with their respective Congressmen and urge its passage.

Col. William B. Wilson, of Philadelphia, president of the Society of the United States Military Telegraph Corps, who has been indefatigable in his efforts to bring about this recognition of the right of the military telegrapher, writes to TELEGRAPH AGE in this enthusiastic vein: "Now for the House of Representatives. Light is beginning to dawn after a long dark night. Yet through the darkness I have never lost hope because of my firm belief that right must prevail in the end."

Wireless Telegraphy.

Mr. Jim Brown, for many years identified with the telegraph service in South Africa, at Johannesburg and other points, and who has now been in this country for about two years past in the service of the Marconi Wireless Telegraph Company at Siasconset, Nantucket, and on the steamer Finland of the Red Star Line, plying between New York and Antwerp, has been appointed manager of the Marconi wireless telegraph station now in course of erection at Sea Gate, Coney Island, near the entrance to New York Harbor. Mr. Brown ranks high as an expert wireless telegrapher and his appointment to this station indicates that the Marconi Company intends to make this the most important station in the vicinity of New York.

One of the most puzzling facts connected with wireless telegraphy is that messages can be sent much farther at night than during the day. This fact was first noticed by Marconi in 1902, in crossing the Atlantic on the steamship Philadelphia. Since then the same phenomenon has been frequently observed by others, but the cause has not yet been determined. Various theories are advanced to explain it, some claiming that the action of the light causes the air to absorb the electric waves; others that the action of the sunlight produces a leakage of electrical energy from the wires used in transmitting the messages, and still others that there is some difference between the electric condition of the earth itself in the day and night. Strange as it may seem, this position is tenable, as the electric waves used in wireless telegraphy are known to slide over the surface of the earth. However, a number of considerations seem to make it probable that the phenomenon is due to the fact that daylight acts upon the air in such a manner as to make it absorb the electric waves. Of course this absorption weakens the energy of the waves and diminishes the distance at which they may be detected.

A good deal of interest has been shown recently in the statement that grounding a wireless telegraph station impairs considerably the efficiency of the station. The London Electrician, in its issue of December 29, gives an abstract of a recent German paper by Herr J. S. Sachs, detailing the author's experiments to arrive at some definite conclusions in this matter. His conclusions are stated thus: the earth's surface is, for waves of thirty-one metres, a strong absorbing and a weak reflecting medium. The connection to earth of sender or receiver is greatly prejudicial to transmission. Insulating it is decidedly favorable. It is desirable to install the apparatus as high above the earth as possible. The integral effect at the receiver varies inversely as the square of the distance of transmission.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

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NEW YORK, FEBRUARY 16, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientage. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The Need of Greater Efficiency in the Telegraph Service.

Executive officers of the telegraph complain of the difficulty they experience in securing the right kind of men to fill many of the higher grade positions above that held at the key. A man may become an operator, and so remain doing good work within that compass, performing labor largely of a perfunctory nature, yet knowing little or nothing about the instruments he works, the mechanism of the telegraph with which he should be familiar, and of the laws of applied electricity. Going upward in the scale the higher qualifications requisite for the proper equipment of managers, wire chiefs and others, appear in large measure to be lacking. More than in any other one feature the service is suffering because of this fact; and this, too, notwithstanding the

presence of many who are contributing intelligent, loyal and painstaking efforts to the great organizations of which they are an active working part. This is, indeed, a deplorable state of affairs. It is unpleasant to contemplate, for it constitutes a direct reflection on the ambition of the great rank and file of telegraph workers as it exists to-day. In a service covering so wide an area and giving employment to so large a number, it would seem as if there should be no excuse for this condition of things. Criticise telegraphic management as we may, the fault is mainly lodged in the men themselves.

These are plain spoken works, yet they are not uttered in the spirit of unfriendliness. Rather are they intended as an admonition because a condition has to be faced and because the welfare of telegraphers is held close at our heart. This great body of men are our friends and we would see them better their status. We are constrained to say, however, that many, especially young men, so far as properly acquiring a thorough and practical knowledge of their business is concerned, are neglecting opportunities not likely to occur again within the lifetime of the average operator. For habits are being formed, unconsciously, perhaps, hard in later years to throw off and overcome, and which bind the operator down to the lower levels and estimates of life, originally carelessly acquired.

Yet men would fain succeed; there is intense pathos in the picture presented of the unsuccessful man, particularly when he has attained to advanced years. Still, how few there are who are willing to deny themselves in young manhood so that afterwards they may reach prosperity and possess greater abundance! How few there are who will patiently and with infinite industry, through study and application, seek to gain a solution of the problem of the business in which they are engaged, and become expert and a master of the subject! Yet no lasting success can be reached without the giving of earnest, conscientious and hard work. The law of equivalents is inexorable. Unfortunately, the difficulties of the task discourage many, and they give up almost as soon as they begin, and then their lives, in consequence, too frequently are permitted to drift.

Now, the telegraph, in which so many are engaged, whether from choice or accident or because of temporary purpose simply, it does not matter which, offers a field of endeavor of exceptional value, at least, as a training school. There is a fascination about the business that exerts a spell, holding many an one to its duties throughout life. This being the case is there any good reason, other things being equal, why a person so situated should be held down to its fundamental purposes and drudge from young manhood to old age at the key? Honest consideration of one's proper sense of manhood should answer in the negative. If intelligence were permitted to hold sway, the careful student with force of

character, able to apply practical knowledge, could no more be kept back and down than the waves of the sea, for the world has a place for every competent man. Such men are being eagerly sought for. They are needed, and urgently so, in the telegraph service. If telegraph executives fail to discover them, of which the chance is remote, for the hunt for this class is unceasing, they will find their opportunities, if not in the telegraph, then in other avocations.

No man's environment is narrow unless he himself makes it so, notwithstanding the pessimistic and essentially false reasoning sometimes heard to the contrary. An alert, broad-minded, self-respecting and intelligent man of capacity, in whatever field he may be placed, will break all confining bonds, enjoy the confidence and trust of his official superiors, and on him the mantle of promotion will be laid. Such men are needed in the telegraph service to fill present and prospective places within its gift, for the future of the telegraph, from the chief executive officer down, must of necessity be confided to the keeping of those now filling the humbler positions.

There are plenty of naturally bright minds in the telegraph employ who can and should, health permitting, make their avocation a personal success if they will but elect to do so. There should be men aplenty in successful training for the best the telegraph has to offer. It is due to individual effort, and that alone, that success can be achieved. The natural gifts that God endows a man with are placed in his keeping only as a means to an end. He has no moral right to let them lie dormant or to abuse their possession. Young men, the telegraph demands and has need of the best there is in you!

• Misuse of Fac-Simile Telegraph Blanks for Advertising Purposes.

The too frequent practice of business concerns and others producing in fac-simile telegraph blanks for advertising purposes, has reached that point when the custom has become one of great annoyance alike to the telegraph companies and to the general public. Complaints are becoming numerous that, imitating the methods pursued by the telegraph companies in delivering their messages, certain private firms send out advertising matter on what purports to be telegraph blanks, the same being enclosed in an envelope, for which the receiver is made to sign in the usual way. Possibly no wrong is intended, yet the practice is wholly reprehensible, and is in direct violation of good taste and of commercial decency. Whether the offending parties know it or not, they are acting within prescribed limits, for the law of copyright protects the telegraph companies. The word "fac-simile," or in fact any other word employed to relieve the transgressor from liability in the premises, does not absolve him in that respect. A well-known law-

yer, amply versed in telegraph law, recently expressed the following opinion: "I don't think that the recipient of a telegram has a right to have it lithographed and used for advertising purposes. I don't think it makes any difference whether or not he marks it 'fac-simile.' A trademark and copyright cannot be avoided in any such manner."

A particularly offensive instance charged to this method of advertising, is related in the case of a pawnbroker whose invitation to people who might be hard pressed for money to call at his office and obtain the same by pledging their watches, jewelry, etc., reached, to the infinite disgust, a large and respectable class, who received what purported to be a telegram, delivered by a uniformed boy garbed in the regulation dress of a messenger. Again, in a certain large Western city thousands of residents were pestered by this form of advertising, and numerous recipients of so-called messages, believing them, because of their adroit wording, to be genuine, took the trouble to call with them at the office of the company whose imprint they bore, prompted to do so in the belief that some mistake had been made.

The telegraph companies in cases like these frequently find it necessary to resort to legal measures in order to stop the circulation of such bogus messages. The only redress usually obtained is the tender of an apology on the part of the offending party and a parade of the baby act, pleading no knowledge that the law was being violated.

In order to overcome this growing evil stern measures of repression should be adopted and punishment secured.

The English underground telegraph system, connecting London with several of the principal cities in the central and northern parts of England, as well as with the more distant point of Glasgow, Scotland, referred to at length elsewhere in this issue, is an experiment in telegraph underground construction probably the most extensive ever attempted. Telegraph engineers the world over are regarding the venture with profound interest, and anxiously await the results of the tests covering the long circuits involved, especially those between London and Glasgow, a distance of over 400 miles. Should the expectation of the English telegraph department be realized and it is shown that the underground system can be worked expeditiously as well as profitably, the advisability of laying wires underground in other countries will doubtless receive careful consideration, particularly between large cities in populous sections.

TELEGRAPH AGE is the only telegraphic newspaper published in America. It is up to date, covering its field thoroughly, and no telegrapher, official or operator, can afford to be without it.

The Overland Telegraph to St. Petersburg.

Mr. George C. Maynard, assistant curator of the department of technology, Smithsonian Institution, Washington, D. C., in a lengthy article entitled "Washington to St. Petersburg—Overland," contributed to the *Electrical Review*, New York, of January 13, an interesting story of the causes which led to the projected construction and the exploration of the route proposed for the overland telegraph by way of Behring Sea to Asia and so on to St. Petersburg. Among other interesting statements not previously fully covered by our own articles on the general subject, Mr. Maynard says:

"Among the brave, far-sighted men of that time, William H. Seward, then Secretary of State, was one of the foremost. The insatiable mania for icebergs of that distinguished American had better foundation in solid sense than anyone understood. He had faith in both submarine cables and overland telegraph lines. For years he had been studying the problems involved in 'putting a girdle 'round the world in forty minutes,' and, with prophetic comprehension, clearly saw the desirability and the practicability of establishing a line crossing Behring Sea and uniting America with Asia and Europe. Under his instructions American diplomatic officials in Russia had made thorough investigations of the physical, social and political questions bearing on the undertaking, and a plan for its accomplishment was developed. This plan did not simply contemplate telegraphic connection between Washington and St. Petersburg, but was intended as an important step toward the establishment of one comprehensive system which should provide means for quick transmission of intelligence to all important points throughout the world. Seward fully realized the advantages of such a system and declared that it is impossible to assign limits to the increase of national influence which must necessarily result from the new facilities we should acquire in that manner for extending throughout the world American ideas and principles of public and private economy, politics, morals, philosophy and religion. The monarch of the Russian empire also had ambitious designs of providing means for reaching distant lands. Official records show that long before Seward's scheme was announced he had made plans and preparations for extending the telegraph system of his government from the mouth of the Amoor river, across the straits of Tartary, over the island of Sakhalin, across the straits of LaPerouse, through Hakodadi, and across the straits of Sangar to Yeddo, the capital of Japan. The difficulties in the way of extending Russian lines into the heart of Japan have somewhat increased since '65.

"The leading spirit in the Russian-American overland telegraph was Perry Macdonough Collins, a citizen of California, who had spent six years in the United States service as commercial agent for the Amoor country and as acting con-

sul at St. Petersburg. During this period he made careful study of the subject and, upon the close of his official duties, set to work to put his plans in operation. He secured liberal concessions and rights of way from Russia and Great Britain, returned to the United States and, most fortunately, enlisted the interest and co-operation of the Western Union Telegraph Company. That company had just completed a telegraph line across the vast western plains and over mountain ranges eight thousand feet high to the Pacific Coast and, by its great experience, administrative ability and financial resources, was fully prepared to carry the line onward to St. Petersburg. Funds to the amount of ten million dollars were provided and operations were promptly commenced and vigorously prosecuted."

* * * * *

"Out of the Civil War period came men endowed by native qualities and stern training, with high courage and that resilient toughness of fibre, physical, intellectual and moral, which fitted them to successfully meet any emergency and overcome all obstacles. Colonel Charles S. Bulkley, an army officer and an experienced telegrapher, was placed in command of the field work. He selected one hundred active young men as leading explorers and superintendents, many of whom were telegraph operators and engineers. Four hundred additional men were employed to do the actual work of constructing the lines and placed under the direction of Edward Conway. Among the leaders were Franklin L. Pope, his brother, Ralph; George Kennan, Frederick Whymper, brother of the famous Alpine climber; Professor Dall, of the Smithsonian Institution; George Willoughby Maynard, the artist, and other well-known men. Major Serge Abasa, a prominent and influential Russian military officer, had command of the Siberian section of the line. The names of the explorers are too many to be noted, the title of hero fits them all. The parties were organized on a semi-military basis, principally for the reason that this would give them a better standard in Russian territory. The officers were commissioned by the governors of several states. Bulkley was a colonel, and Frank Pope a major on the staff of Governor Andrew, of Massachusetts. Quite a number of the men held commissions from the governor of California. A spirit of high enterprise and heroic adventure filled and animated the heart of every man in the expedition. That there was a dash of danger in the work before them only made them the more anxious to begin it."

* * * * *

"From San Francisco four main parties were sent out in different vessels. One of these, under Franklin L. Pope, went to the mouth of the Frazer river, in British Columbia, to explore the country along that stream and across to the Yukon; the second, under Robert Kennicutt, to St. Michaels, on Norton sound, to go up the

Yukon Valley and meet the British Columbia party, and also to locate a route northwest to Behring Sea; the third party, in charge of Collins L. MacRae, was landed in Anadyr Bay to explore the country westward to Behring Sea and eastward up the Anadyr River to meet the men of the fourth division to which, starting in at Petropavlovski, was assigned the task of surveying the country between the Amoor and Anadyr rivers. Major Abasa was in command of the entire work in the Siberian territory, with George Kennan and Richard J. Bush as his principal assistants."

* * * * *

"At the close of the year's work Franklin L. Pope, who was the most experienced and competent telegraph engineer in the whole expedition, expressed the opinion that the entire line, from the Frazer to the Amoor, could be completed by the fall of 1867, and reports from other departments confirmed that opinion. To reach that end the energy of every man was put forth. To them, in their isolation, tidings from the world seldom came and they were in ignorance of the progress of events. The Atlantic cable had been in operation many months before the news reached them and orders to abandon the overland enterprise were received. They were sadly disappointed, and reluctantly obeyed instructions to return to their homes."

* * * * *

"Thirty-five years later, when the people of the United States desired to run a line of telegraph to the northwestern tip of the continent, they said 'by your leave,' to nobody. The entire route lay within their own domain. In less than three years the officers and men of the army signal service, under the direction of General A. W. Greely, laid more than two thousand miles of submarine cable, connecting Seattle with Valdez; built more than fifteen hundred miles of land line between Valdez and St. Michaels, and spanned Norton Sound by means of wireless telegraphy."

* * * * *

"Away out near the furthest point on the American side of Behring Sea a line of telegraph poles, erected in 1866, is still standing, sound and strong. Their permanency is due, as explained by a recent scientific visitor to that locality, to the fact that they are not subject to the ravages of tropical insects. Overlooking that spot stands a high, conspicuous, wireless-telegraph tower erected by General Greely in 1904. For thirty-eight years the old line has remained dumb. From the new tower electric signals flash and pulsate a thousand miles out to sea, calling to ships whose masts are tipped with the new St. Elmo's fire, and far across Siberian wastes, studded with mountain peaks, bearing a message from the new liberty-loving world to the liberty-longing millions of ancient empires. The world awaits the answer."

General Mention.

Mr. William H. Young, night manager of the Western Union Telegraph Company, Washington, D. C., and president of the Old Time Telegraphers' and Historical Association, in renewing his subscription, writes: "It is my desire and pleasure to keep up my subscription."

The Edison Medal Committee of the American Institute of Electrical Engineers, Mr. John W. Howell, chairman, has just issued a circular to the educational institutions of the United States, calling their attention to the fact that funds are available for the award of the medal this year and pointing out the conditions under which students can enter in competition for it. This will be the first award of the medal, and it is hoped that there will be many contestants for the honor.

Mr. D. P. Boyd, manager of the Postal Telegraph-Cable office at Strong City, Kan., in a recent letter renewing his subscription, remarked: "In forty-three years' experience I find there is always something to learn."

Such is the extent to which the stealing of copper telegraph and telephone wire has developed in this country that stern measures are being adopted for its suppression. As a result it is stated that there are now about forty wire thieves of this class serving terms in the penitentiary. One company alone has succeeded in having about thirty men convicted.

Judge Hazel, of Buffalo, N. Y., has lately handed down a decision in a suit that was started in 1876 against Jay Gould, who was accused of appropriating discoveries patented by Thomas A. Edison for the more rapid transmission of telegraphic communication. The decision was adverse to the Gould interests. The amount involved is problematical.

It is stated that there is such a large movement of telegrams between Buenos Ayres and Mendoza, Argentina, that the construction of new lines is now absolutely essential. At the present time there are only two lines, the same as those existing twenty years ago. The Cuyo Provinces have developed and gained in population so much of late years that the present lines are inadequate to carry the traffic.

Dossert and Company, New York, are placing on the market a modification of their solderless wire and cable connector, especially adapted to the use of motor leads. The new device is designed to do away with the inconvenience of the present method of connecting motor leads to the wires.

A Jersey City, N. J., lineman a few days ago found a peculiar trouble on a line he was sent out to clear. A trolley car under full headway had struck a heavy wagon and had hurled it on top of a thirty-foot telegraph pole.

A Letter Telegraph System for Alaska.

Col. John P. Clum, formerly postoffice inspector for the district of Alaska, recently appointed postmaster at Fairbanks, Alaska, has advanced a plan for cheaper telegraph tolls in Alaska. In an interview several days ago on this subject, published in the Washington Star, Col. Clum said:

"One matter which has already been presented to the department and which I hope will receive consideration this winter is a plan for cheaper telegraphic communication with Alaska, or what might be termed a mail-telegraph service. The government owns the cables, overland lines and wireless systems operated to all points between Seattle, Wash., and Nome, Alaska. It would seem entirely practicable for Congress to authorize the use of this telegraph system in direct connection with the mail service.

"To illustrate the plan, let me say that to send a letter from Washington, D. C., to Nome, Alaska, and receive a reply over the winter trail requires from four and a half to five months. Now, if Congress would authorize the use of the government's wires—and wireless—for the transmission of short letters, such communications could be sent from Washington to Nome and a reply received within ten days at any time during the year.

"It is proposed that the government shall issue what may be termed 'telegraph stamps.' I am not prepared to suggest what the rates should be, but suppose the stamps were of two denominations—one for twenty-five cents and one for fifty cents. The smaller stamp would cover the telegraphic charges on a letter not exceeding twenty-five words, and the larger stamp would perform a like service for letters of more than twenty-five and less than fifty words.

"The letter would be written in the same form as an ordinary telegram and then inclosed in an envelope addressed to the manager of the government telegraph station at Seattle, Wash. Besides the regular two-cent postage stamp there would be affixed to the envelope a twenty-five-cent or a fifty-cent telegraph stamp, according to the number of words contained in the letter. From Seattle the letter would be forwarded by wire to the office in Alaska nearest the residence of the addressee. There it would be inclosed in a penalty envelope for delivery to addressee by mail provided the addressee did not reside within the delivery of the local telegraph office. These telegraphic letters would be sent from points in Alaska in the same manner and at the same rates and would be forwarded to addressees from Seattle in penalty envelopes. When such letters were filed directly in a government telegraph office the telegraph stamp could be affixed to the letter itself.

It is possible that the present cable service would not be adequate for the satisfactory operation of the plan here suggested, but there would seem to be no reason why a mail telegraph ser-

vice could not be undertaken at once from Valdez to all interior Alaskan points—and the mails can be conveyed from Seattle to Valdez in about four days at all seasons of the year. The additional cost to the government would not mean more than the pay of a dozen or fifteen additional operators, and this cost would be much more than offset by the additional revenues, while the facilities thus afforded for prompt communication with Alaska at reasonable rates would be of the greatest importance to the residents of that territory, as well as to the thousands who have friends or investments there."

Major Glassford, in charge of the government cable in Seattle, is reported by a local paper to have said, regarding the plan advanced by Col. Clum, that he considered the scheme entirely impracticable.

"The Alaska cable and telegraph are being operated on the lowest possible basis," said Major Glassford, "and there is a special rate now in force for what we term social messages that is lower than such message could be sent from Seattle.

"A great many reductions have been made in rates and it should be remembered that the service has its limitations. Under the special rate on social messages it is possible to send a message from Washington, D. C., to Nome and receive a reply in twenty-six days, instead of five months, as Mr. Clum says in his interview. It takes five days for a letter to come from Washington to Seattle, and another six days to forward the letter by boat from Seattle to Valdez, and then a day to forward by telegraph from Valdez to Nome, making a total of thirteen days. This gives twenty-six days for a message and reply, and it has been made in twenty.

"As far as the letter system is concerned, any message addressed to a party at Fairbanks is delivered through the mail if it is found that the party is not in Fairbanks, but out at some of the camps on the creeks. The social message rate has been in effect for some time, and during the month of December something over 200 of these messages were handled through the cable office."

The present political awakening in China appears to be due in very large measure to the extension and the enlightening influences of the telegraph. Sheng Taotal, when director-general of railways and telegraphs of the Chinese Empire five years ago, uttered these prophetic words now coming true: "The beginning of this is due, I believe, to the establishment of railroads and telegraphs, particularly the telegraphs, in the empire. The telegraph, more than anything else, is breaking down the barriers of distance. Newspapers in consequence have sprung up all along the lines of the telegraphs and are teaching Chinamen everywhere that they have an empire."

The Rudd Revolving Addressed Envelope Holder.

It is generally conceded by telegraph managers that by far the largest majority of claims and complaints from patrons of the telegraph are due to errors and delays in the delivery department. Upon close investigation it has been found that there is fully as much, if not more, delay between the wire and the messenger boy than there is between the much abused messenger boy and the customer. This may be due in a small measure to slow checking in the operating room and sometimes to indifferent work on the part of the tube boy in numbering and copying; but far greater delay is due to the superscriber, and that, too, through no fault of his.

It is usually between ten o'clock A. M. and three o'clock P. M. that the greatest file of messages reach the superscription department. These



THE RUDD REVOLVING ADDRESSED ENVELOPE HOLDER.

are thrown before the superscriber in bunches of five to twenty. The envelope must be addressed and numbered, the message folded, enclosed and sealed, and no matter whether in the pile of messages before the superscriber there may be four or five for one firm, each must be enclosed in a separate envelope and individually addressed. This, of course, necessarily takes time, and it is the loss of this time that is sure to bring complaint. In some of the larger offices it has been possible to expedite the business somewhat by the use of addressed envelopes. This plan, however, has not proved to be a time-saver of much practical value, because of the difficulty in taking care of the envelopes so that they do not become mixed one address with another, and also because

the trouble of keeping them within convenient reach of the superscriber. Especially is this true in large offices where the addressed envelopes to be of value one must have from seventy-five to one hundred on hand. The ordinary rack to hold such a number is large, unsightly, and cannot be used by more than two superscribers at the same time.

In the Western Union office at Boston the inconvenience of this arrangement has been overcome by the use of what the employees facetiously term "Rudd's Revolver," but which is more properly known as the "Revolving Addressed Envelope Holder." The device consists simply of a sheet iron frame, hexagon in form, with seven shelves on a face, each half arranged to hold two packages of addressed (stamped) envelopes. The entire frame is so constructed as to revolve upon a brass rod, thus being easily turned and affording the superscriber ready access to any part. Mr. W. A. Rudd, who is the manager of the Boston office, is the designer of this ingenious contrivance, and he will be glad to furnish a sketch or blue print of the same to any one to whom it would be of value, simply at the cost of the print.

The Murray Printing Telegraph.

Donald Murray, of London, England, the inventor of the Murray telegraph system, has this to say in a letter in the *Electrical World* of January 27, concerning his invention:

"The Murray system has reached a speed of one hundred and fifty words a minute, and without particular difficulty a speed of 120 words (720 letters) per minute in each direction (duplex) can be attained; while a speed of 100 words (600 letters) per minute in each direction is obtainable with ease over long distances."

* * * * *

"Some of your telegraphic readers may be interested to learn that the Murray automatic system is in regular daily work handling commercial messages between London and Edinburg, and that the British Post Office is having a complete duplex installation of the system constructed for London-Dublin. The practical working trials of the apparatus in Germany are not yet concluded. Russia has ordered an equipment for two circuits, and the apparatus is shortly to be installed in Russia, probably between St. Petersburg, Moscow and Odessa. The Austrian telegraph administration has ordered a trial set to work between Vienna and Prague, and the Indian Government is having a complete duplex installation of the system constructed for Calcutta-Bombay, a distance of 1,230 miles."

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

Mr. Hesketh Reports on the Telegraph.

The Postmaster General of Australia, who is the head of the telegraph system in that country, selected John Hesketh, electrical engineer to the Queensland postal service, to tour America and Europe in order to investigate and report on electrical matters. His mission was to inquire specially into telephony and telegraphy, and the present methods adopted in those countries. Mr. Hesketh's report has recently been made public. What he has to say regarding the telegraph in the United States will be of interest to our readers. Under various subheads he says:

"Construction Methods.—The methods of construction adopted in the United States of America are not widely different from those in use in Australia. The following are the chief points of difference:

"Poles are erected closer together, but are no heavier nor longer. They are usually fitted with crossarms, each of which carries six wires. The crossarms are double bolted to the pole, and braced thereto with one or two braces.

"Insulators are, almost without exception, of glass.

"Wires are of iron or copper, according to the circuit for which they are to be used. Heavy gauges are exceptional, 300-pound copper being considered sufficient for most wires. The controlling factors recognized in Australia are admitted in America.

"Ties.—The method of binding the wire to the insulator is different from that adopted by us, but its advantages are not proven.

"Joints.—Sleeve joints are used for copper wires and twist joints for iron. Sleeve joints have been tried for iron wires, also, with good results so far. Soldered joints are very infrequent.

"Pins.—Insulator pins are various, but generally of wood, or, if of iron, then fitted with wooden threads for the insulators.

"Clearing.—Lines erected through the bush in America are not so thoroughly cleared as in Australia. The interruptions through contact with trees, fallen limbs, etc., are consequently higher.

"Apparatus.—Current supply. In every large office batteries are practically unknown. Motor-dynamos, at varying voltages, furnish the current for all purposes direct. Accumulators are found to be practically unnecessary.

"Working currents are much heavier than with us.

"Morse Lines.—The usual equipment for Morse lines is a key known by us as the American key, a non-polarized relay, and light sounder fitted in a resonator on an adjustable pedestal.

"Duplexes are not usually employed, except as parts of a divided quad. I was much disappointed in that in America I saw nothing in quad working which was any improvement upon what we do in Australia. The acknowledged attitude toward quads, by almost everybody with whom I con-

versed, was that, as duplexes, they could be relied upon; when working three ways they might be good; but no effort was made to work four ways, unless such was absolutely unavoidable. In only one instance was I able to see good quad working, and that was on a line only 250 miles long. I paid special attention to quads in every important office, from San Francisco to New York, yet only saw this one instance of good working. In all the other cases the No. 2 side was either quite unworkable, or so shaky that it was risky operating trying to read the signals.

"The quad methods were interesting, however. The current supply being from the dynamos, a special non-continuity-preserving pole-changer must be used. The increment transmitter is the field arrangement.

"The currents are (maximum or full), 50, 60, and even 80 milliamperes.

"Balances are obtained without galvanometers, and by very rough 'hit-or-miss' methods. Curative devices are practically not used at all. Summing up, there is nothing in American quad methods to lead us to adopt them, except the one excellent feature of dynamo supply.

"High-Speed Systems.—Here, again, there was not much to copy. Several systems have been tried, or were under trial, but none had survived except the Wheatstone, and this worked at no exceptional speeds. One hundred and eighty words was high. In my opinion, where the Wheatstone survived, it was not by reason of its fitness, for from my observation it was not imparting any economy as there worked.

"Bonus System.—It is usual in American offices for operators to receive a bonus of 1 cent for every message operated over, say, 300 in one day. It is worthy of consideration whether some such system is not feasible in the large offices of the Commonwealth.

"As indicating the daily work of operators in America, the following typical examples were shown to me in a Chicago office:

Line to	Time		Messages	
	From	To	Sent	Rcd.
St. Louis.....Quad. No. 1	8 a.m.	3.15 p.m.	440	506
Detroit .....Quad. No. 1	8 a.m.	3.15 p.m.	407	404
St. Paul.....Quad. No. 1	8 a.m.	3.10 p.m.	539	485
New York.....Duplex	8 a.m.	3.18 p.m.	—	400

"The operators on these lines would, therefore, be receiving from one to two dollars a day bonus on the work from 8 a.m. to 3.15 p.m., in addition to their daily pay.

"Operators are paid rates varying from fifty to ninety dollars a month. Preference is given to those who typewrite, such receiving an advantage of as much as ten dollars a month, in addition to the more secure tenure of employment.

"Speaking generally, I should say that the speed of operating in America is not higher than in Australia, except on bonus lines, where the obvious incentive of higher rates of pay accounts for the increased efficiency."

(To be Continued.)

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

SAN FRANCISCO, POSTAL:

Mr. Al. Buhot is absent on a vacation of a month.

Mr. W. C. Swain, electrician for this company, has returned from a tour of inspection of the company's lines throughout Montana and down this Coast. He was accompanied by Traffic Manager Minor M. Davis, of New York, whom he met at Butte, Mon. Mr. Davis will remain here for several days.

Mr. M. L. Hadley, an old time telegrapher of Philadelphia, New York, and other Eastern cities, and Canada, is doing well here in the advertising business.

Mr. Fred H. Cleveland has resigned his position here, and it is not likely that he will return to the key, although his ability as an operator is not greatly impaired. He has been in the telegraph business for the last thirty-five years, having worked a number of years in the cable station at North Sidney, C. B., where, in the old "Pen" days he was considered one of the finest.

BOSTON, WESTERN UNION.

Owing to the increased traffic at the Fishmarket office, the old quarters were found to be inadequate to the proper transaction of the business, and have accordingly been moved recently from 197 Atlantic avenue to a new and more spacious office at No. 188, near-by. The force has been increased and a number of through wires added to the facilities of the office. It now has direct wires to Chicago, New York, Baltimore, Washington, Philadelphia, and all the markets. Manager W. A. Rudd and Inspector Roorbach are and have good reason to feel proud of the new office, which is one of the most important branches in the city.

At the leather district office, Robert Tobin, an old timer, still remains as manager, and the work performed by him appears to be as effective as ever.

Col. R. C. Clowry, president of the company, accompanied by General Superintendent Belvidere Brooks, of New York, were recent visitors at the main office. Chief Operator T. F. Clark gave a demonstration of his fire drill for the benefit of the guests, an exhibit which Col.

Clowry declared to be a fine showing. Manager M. W. Hamblin, of New York, who later visited the office, was also shown an exhibition of the fire drill.

BALTIMORE, WESTERN UNION.

Work on the new office of this company, which is located in the Equitable Building, rebuilt since the great fire, is progressing rapidly, and when completed will constitute one of the best appointed offices in the great chain of the company's possession. The effort is being made to have it ready for occupancy by March 1, and to this end all energies are directed, work being pushed day and night. The present undertaking makes the third entire new equipment installed in the Equitable Building, old and new. We first occupied the basement, with the clerical force on the upper floor, then under Manager Creamer, who is a hustler, we secured a new operating room on the second floor. Burned out by the great fire, we now for the third time, in the rearrangement of space, will occupy the ninth floor for the operating department, with the clerical department in the basement. The Gold and Stock telegraph department will also have quarters on the ninth floor, which, by the way, is a large, light and airy room.

Benjamin Birch has been sent to Annapolis to help out during the Legislative session there.

PHILADELPHIA, WESTERN UNION.

J. H. Abdill has resigned to accept a position with the Bell Telephone Company, as wire chief.

D. A. Toland, aged forty-seven years, a well-known operator, died February 1, of typhoid fever after a short illness.

Messrs. McBride and Riley were sent to Mt. Holly, N. J., to handle press matter during a recent murder trial there.

Walter Bair, who was stricken several months ago with paralysis, has so far recovered as to again resume duty.

Ralph Rowles, who resigned some months ago to accept a position as an operator with the Carnegie Steel Company, this city, has been promoted to a responsible clerkship.

Manager Richards, of Carlisle, Pa., has again returned to duty after a severe attack of quinsy. During his absence his duties were performed by his sister, Miss Anna Richards.

Mr. W. S. Fowler, of Vineland, N. J., has been appointed manager at New Brunswick, N. J. vice H. J. Witt, resigned to go with the Postal.

Mr. H. Lentz, of Bedford, Pa., has been appointed manager at Camden, N. J., vice Miss Lacey, transferred to the West Chester, Pa., office, vice Mr. Hall, who becomes manager at Seaford, Del.

Mr. C. A. Prigg, of Osceola Mills, Pa., has been appointed manager at Chester, Pa., vice J. T. Mortland, resigned to go with the Bell Telephone Company, Philadelphia.

Mr. A. M. Long, of the Hagerstown, Md. office, has been promoted to the managership, vice

J. K. Snyder, resigned, to go with the Cumberland Valley Railroad Company.

OTTAWA, ONT., GREAT NORTH WESTERN

The personnel of this office is made up as follows: James G. Davies, manager; Charles E. Davies, chief operator; E. M. Marshall, night chief operator; A. H. Smith, cashier; Miss N. Trimble, bookkeeper, while W. M. Manchester, W. Leslie, W. Forsyth, H. Hamer, Frank Turcotte, Miss R. Perrault, Miss M. Haryett, M. Kiely, W. E. Burris and W. Brown constitute the force of operators. G. Dalton, J. Keenehan, W. G. Irwin, Miss I. Armstrong and E. B. Marshall are the clerks, T. W. Quayle, reporter, and A. Larocque and J. Caron, linemen. The messenger force consists of eighteen wide-awake young fellows who, it is said, would put a New York messenger boy to shame.

The company own the four-story building at the corner of Metcalf and Sparks streets, the ground floor and basement of which are given up to their own use for the main office and operating departments.

There are branches at the Russell House, the Grand Union Hotel, the Windsor House and at Hull, Que., just across the Ottawa River, the latter office being also under the jurisdiction of the Ottawa manager.

The entire building has been renovated, and extensive repairs made during the past year, including an entire new operating room, a new forty-wire switchboard and new hardwood operating tables being chief among the new acquisitions.

CHICAGO, WESTERN UNION.

Miss Lena Ditman, of the St. Louis division, has resigned to accept a position with the American Can Company.

Miss Lizzie Heppe is again with us.

Miss Cathrine Gallagher of this office and Mr. Chatterson of Columbus, Ohio, were married a few days ago.

Charles White, of the St. Paul division, is at Hot Springs, Ark., whither he is staying for the benefit of his health.

The Signal Corps boys announce that their seventh annual ball will take place Friday evening, February 9, at the armory.

The seventeenth annual meeting of the Chicago Telegraphers' Aid Society was held February 4, 1906, and the following were elected officers for the ensuing year: Charles H. Finley, president; Henry E. Whitcomb, vice-president; C. R. Copeland, secretary; John S. McCurdy, treasurer.

Executive committee—F. M. Crittenton, J. E. Applegate, W. W. Hawthorne, Carl Otto, John J. O'Brien, Henry Jahn, F. L. Donaldson.

Auditors—W. De Haven, Evan T. Jones, Jr., C. H. Cartmell.

The membership on December 31, 1905, was 1,026. Secretary's report for year 1905 is as follows:

RECEIPTS.

Cash on hand, January 1, 1905.....	\$ 630.96
Cash in bank, January 1, 1905.....	2,060.45
Applications	346.00
Dues	5,213.50
Interest	62.26

Total\$8,313.17

DISBURSEMENTS.

Death Benefits	\$700.00
Sick Benefits	4,251.94
Secretary	180.00
Treasurer	25.00
Commissions	111.93
Miscellaneous	100.00
Cash on hand January 1, 1906.....	544.00
Cash in bank January 1, 1906.....	2,400.00

Total\$8,313.17

POSTAL TELEGRAPH-CABLE COMPANY.

EXECUTIVE OFFICES.

Mrs. John F. Skirrow, wife of the associate electrical engineer of the company, who himself is absent on account of sickness, died of cancer of the stomach on February 3. The funeral, which occurred on February 6, was largely attended by officials. Much sympathy is expressed for Mr. Skirrow in his bereavement, especially because of the peculiarly sad attendant circumstances.

Mr. Minor M. Davis, traffic manager and electrical engineer of the company, is making a tour of inspection in the Pacific coast offices.

Mr. Joseph W. Larish, formerly electrician of the Western Union Telegraph Company at Boston, Mass., but for the past three years in outside business, has accepted a position in the district electrician's office in this city.

It may not be generally understood, but it is nevertheless a fact, that the late John W. Mackay endowed in perpetuity two beds in St. Vincent's Hospital on West Eleventh street for the benefit of employees of the Postal Telegraph-Cable Company.

IN THE OPERATING DEPARTMENT

M. J. O'Donnell has returned from Kingston, N. Y., where he was temporarily with the Publishers Press.

E. D. Rowland has been assigned to the Evening World force.

A phantoplex circuit between this and the Newark, N. J., office, has been installed.

J. B. Havice has been assigned to the Evening Post force.

F. C. Yule has returned from a two months' leave spent at his home in Chicago.

E. G. Walther and R. G. Salisbury have been transferred to the Cotton Exchange office.

W. J. Bradley of the first Chicago bonus wire has resigned to accept a position with a broker.

Owing to ill health, V. C. Frost has secured an indefinite leave of absence.

A. J. Ward has returned after an absence of three weeks, due to illness.

Departures—J. Coyle.

J. P. Kearns has resumed duty after an absence of five months.

Western Night Chief S. A. Coleman has been confined to his home for the past two weeks owing to illness.

NEW YORK.

WESTERN UNION TELEGRAPH COMPANY EXECUTIVE OFFICES.

Extensive alterations are being made in this building, which are in the nature of necessary improvements. That portion of the structure known previously as the annex and which is located at No. 8 Dey street, is being utilized for office purposes. The hallways on each of the upper floors of 195 Broadway have been extended through the Dey street section of the building, which has made available much room for the conduct of the telegraph business, which was heretofore inconveniently located.

Mr. H. V. Shelley, formerly manager at Bridgeport, Conn., and latterly a wire chief in the operating department here, has been appointed manager of the Produce Exchange office, vice Thomas C. Eipper, resigned to enter other business. Mr. Eipper has been manager of this important branch office for twenty-three years.

Mr. E. B. Saylor, superintendent at Pittsburg, was among those recently visiting the executive offices.

IN THE OPERATING DEPARTMENT

The Woodmen of the World, a fraternal insurance institution with which a number of telegraphers of this office are affiliated, recently held their public installation of officers. The affair was unique, owing to the fact that the numerous camps in the vicinity installed their officers jointly. Ex-State Senator W. C. Burton, formerly of this office, who is a woodman, was presented with a solid gold charm by a Bridgeport delegation for having rendered them material assistance on several occasions.

Recent appointments to service in the quadruplex department include M. T. Durkin, of Carmel, N. Y., and J. F. Stickel, of Chicago, Ill.

Miss B. C. Tracy, of the Central Cable office, a popular and very efficient operator, has resigned, and on February 14 was married to Mr. T. Carley.

Miss Agnes Sullivan has been transferred to the cable office, 16 Broad street.

Mr. Durkin, quad chief, has returned to duty after an absence of three weeks, due to illness.

Friends of "Senator" W. L. Ives, who has been ill, will be pleased to hear that while he will not be able to resume duty for some time yet, he is rapidly improving in health, and has gone to Syracuse, N. Y., to recuperate.

Another employee on the sick list is Traffic Chief R. Ferguson.

Mr. John Brant, secretary of the Old Time Telegraphers' and Historical Association, who has been confined to his home on account of ill-

ness, is again able to leave his house, but not yet to return to his office.

Mr. A. A. Offutt is still another who is absent because of sickness.

OTHER NEW YORK ITEMS.

Mr. George Morgan, an expert telegrapher, up to two years ago identified with the telegraphs, Brisbane, Australia, and for the past two years a visitor in England and Canada, is now in New York City, where he expects to locate permanently.

The general offices of the Serial Building Loan and Savings Institution and the Electric Building Loan and Savings Association have been moved from 195 Broadway to 253 Broadway, Postal Telegraph Building. A branch office will be maintained at 195 Broadway for the accommodation of the Western Union members. The removal was made necessary because the Western Union Telegraph Company needed, for its own use, the office space occupied by the loan associations.

The proceedings of the thirty-ninth annual meeting of the Telegraphers' Mutual Benefit Association, held in New York, November 15, 1905, has made its appearance. It embodies a pamphlet of thirty pages, and as it contains full reports of the several officers it is especially valuable inasmuch as it presents a correct transcript of the actual condition of the association, which we are glad to say, is most prosperous. A small pamphlet has also been issued giving the constitution and by-laws originally adopted in 1879, together with the various amendments thereto, which have since been made, including those adopted on the occasion of the last meeting.

The Postal Branch Managers of Cincinnati Dine Together.

The local branch managers, together with the clerical force, of the Postal Telegraph-Cable Company, at Cincinnati, assembled for their annual dinner, tendered by Manager C. E. Sawtelle, on Tuesday evening, January 23. The affair was held at the Business Men's Club, and covers were laid for seventy. Nearly one-half of those attending were ladies. Mr. Sawtelle presided, and the guests of honor, seated at his right and left respectively, were Superintendent E. W. Collins, from Cleveland; Manager A. W. Rinehart from Pittsburg, and Prosecuting Attorney of Cincinnati, Hiram M. Rulison, a former telegrapher.

Mr. Rinehart, in responding to the toast "The Ladies," said that a few years ago there was not one woman telegrapher in Pittsburg. Now twenty per cent. of the operators are women. Woman's efficiency in the telegraphic field, as in many others, has been proven beyond a doubt, a number of them even having become chief operators.

Miss Margaret Brady, who answered to the toast "The Gentlemen," gave the sterner sex some pretty hard raps, her utterances being in the

form of an original poem written for the occasion.

Mr. Elmer Sawtelle replied to the toast "The Branch Manager." His remarks were in a humorous vein, vividly depicting the trials and tribulations of the branch manager viewed through the eyes of the main office operator. He dwelt upon the fact that the successful branch manager seems to feel that the prosperity of the entire company revolves around his particular branch office, and that it was this sort of enthusiasm which raised the receipts of the company.

Hon. Hiram R. Rulison responded to the toast "The Lawyer," and gave a number of humorous incidents in the life of an attorney, as well as some valuable advice to the young people present, at the same time making no demand for his fees in advance.

Superintendent Collins responded very feelingly to the compliment paid him by Miss Ethel Kyle in the toast "Our Superintendent." He also gave some words of counsel and spoke for a few moments on the general subject of Enthusiasm.

Mr. Thomas Bruton's response to the toast "The Banquet," brought forth prolonged applause, his remarks not only being complimentary to this particular occasion, but to the Cincinnati operators in general, and he certainly excelled from an oratorical point of view.

General Superintendent E. J. Nally, of Chicago, expected to have been present, but instead sent a letter, in the course of which he held up as an example worthy of emulation the manhood and career of the late Marshall Field of Chicago.

The next meeting will probably be devoted to a discussion of suggestions for the betterment of the service, etc. The social features will be left entirely to the ladies.

Book Notice.

"Wireless Telegraphy and Telephony," by Prof. Domenico Mazzotto, has been translated from the original Italian by S. R. Bottone, the well-known English author of electrical literature, and is published in this country by the Macmillan Company, New York. The volume takes up the subject of wireless telegraphy from its inception and traces chronologically the progress which has been made in radio-telegraphic signaling from the first experiments of Marconi at Bologna down to the last results of transatlantic radiophony. It discusses the general subject intelligently, including wireless telephony, reviews the different systems in vogue and the apparatus employed; enlarges upon the topic of electric waves, refers to the experiments that have been tried, as well as the principles on which the new signaling is founded, and passes an opinion as to the present state of radio-activity. The volume contains 416 pages, twelve chapters, and over 250 illustrations. The price is \$2, and orders will be filled by addressing J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

Business Notice.

That portion of the business of the Willyoung and Gibson Company, of 36 West Thirteenth street, New York, which consisted of the manufacture of condensers, and which have achieved such an enviable reputation, will hereafter be manufactured by J. H. Bunnell and Company, New York, who have purchased this right.

The Electric Storage Battery Company, of Philadelphia, has filed papers in a suit against the Universal Storage Battery Company, manufacturer of the Morrison battery, claiming fifty thousand dollars damages for infringing in the construction of the Universal plate, the Knowles patent, owned by the Electric Storage Battery Company. Suit has been brought in Wilmington, Delaware, the Universal Storage Battery Company being a Delaware corporation.

Ottawa, Ont.

(Communicated.)

Although not the largest city in Canada, Ottawa is a strikingly handsome and particularly interesting town. It is the capital of the Dominion and is, therefore, the home, for the greater portion of each year, of the Governor-General of Canada, the Premier and the cabinet ministers.

The Dominion Parliament Buildings are situated upon a high bluff overlooking the Ottawa river, and it is universally conceded that there is no site on the continent more picturesque than that selected for those buildings.

Ottawa is also one of the most important Canadian cities commercially. Situated at the junction of the Ottawa and Gatineau rivers, upon the Ontario side, the Chaudiere Falls furnish 60,000 horse power for commercial uses. The electric railway system and electric light plant has always been famous and looked upon by experts as a model, the magnificent water power of Chaudiere Falls having afforded special facilities for electrical development.

Ottawa, from its location, is destined to become a great railway center, there being now the Canadian Pacific, Grand Trunk, New York Central and the Canada Atlantic, with the Canadian Northern and Grand Trunk Pacific headed in this direction.

The population, including suburbs, is estimated to be fully 100,000.

The city was originally known as By-Town, named after Col. By, who constructed the Rideau Canal in 1827, a canal 126 miles in length, connecting the Ottawa river and Lake Ontario.

On the corner of Metcalf and Sparks streets, the most central location in the city, is situated the Great North-Western Telegraph Building, the ground floor of which is given up to one of the most complete and up-to-date telegraph offices in Canada or even in the United States. The Ottawa office has direct wire communication with all of the principal Great North-Western offices in Canada.

The Vibroplex

In order to afford buyers of the Vibroplex, the most perfect telegraphic transmitter extant, an opportunity to deal conveniently with their nearest home agent, the following authorized representatives are named for their special benefit:

Chicago, Ill.—W. T. Plummer, Postal Tel. Co.
Cincinnati, O.—John Stangle, Western Union Tel. Co.
New York.—G. H. Wiser, Postal Tel. Co.
Philadelphia, Pa.—D. Good, West. Union Tel. Co.
Pittsburg, Pa.—F. J. McKenna, West. Union Tel. Co.

Hudson's Word Register.

Buyers of Hudson's Word Register, the standard and most simple and accurate device for counting the words written upon the typewriter, will consult their convenience by communicating with any of the following named authorized agents, preferably the one nearest to their place of residence:

Kansas City, Mo.—J. N. Harper, West. Union Tel. Co.
Philadelphia, Pa.—Daniel Good, West. Union Tel. Co.
Pittsburg, Pa.—F. J. McKenna, West. Union Tel. Co.

[Advertising will be accepted to appear in this column at the rate of three cents a word, estimating nine words to the line.]

Rubber Telegraph Key Knobs.

Price fifteen cents, reduced from twenty-five cents. No operator who has to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. This renders the touch smooth and the manipulation of the key much easier. Remit in one or two-cent stamps and address.

J. B. Taltavali, TELEGRAPH AGE, 253 Broadway, New York.

Signal Corps Field Train.

A model field train for the signal corps of the army will be organized and fitted up, and will be maintained at Fort Omaha, Neb. Organization of this train will start at once. A number of the vehicles for the train are already at the post.

The model train is to consist of three construction wagons, one automobile telegraph wagon, one automobile repair wagon, four lance trucks, four wagons of the pintle type—the last two types using entirely the wheels adopted by the quartermaster's department for the escort wagons—four instrument wagons, built up on running gear of the standard army ambulance, and six reel carts.

Premium on Temperance.

A Swiss life insurance company has agreed to insure railroad and telegraph men who are members of temperance societies for four per cent. less than the premiums charged to non-members; and a Swiss accident insurance company which for some time has made a rebate of ten per cent. to total abstainers is so well satisfied with the result that it made the rebate fifteen per cent., beginning with the first of this year.—Railroad Gazette.

THE Canadian Pacific R'y Co's Telegraph

Executive Offices. Montreal
JAS. KENT, Manager

The Largest Telegraph System in Canada
63454 miles of wire; 1860 offices.

DIRECT CONNECTION WITH
POSTAL TELEGRAPH-CABLE COMPANY
COMMERCIAL CABLE COMPANY
HALIFAX-BERMUDA AND DIRECT WEST
INDIES CABLE COMPANY
NEWFOUNDLAND GOVERNMENT SYSTEM
UNITED STATES AND HAYTI CABLE
COMPANY
BRITISH PACIFIC CABLES
COMMERCIAL PACIFIC CABLE
DOMINION GOVERNMENT LINES TO THE
YUKON

Direct Through Wires to All Parts of
CANADA
NEW YORK CHICAGO SAN FRANCISCO
BOSTON, ETC.

The Postal Telegraph-Cable Company of Texas

S. M. ENGLISH, General Manager
W. H. ORDWAY, Auditor

Was organized in 1896 for the purpose of operating as a connecting line with the Postal Telegraph-Cable Company in the territory west of the Mississippi River south of the line from St. Louis to Kansas City, including Southern Missouri and Kansas, Arkansas, Indian and Oklahoma territories, Texas and Louisiana. Its lines are built of the best material in the most substantial manner. Its equipment includes the latest improved apparatus, dynamo currents being used exclusively. It operates 4,522 miles of pole line carrying 12,625 miles of wire, almost entirely copper, the quadruplex wires weighing 300 pounds per mile. Its lines reach all the larger cities and towns in the Southwest, extending over a territory rich in mineral and farming lands of which further information of an interesting character will be found in this space in future issues.

The Executive Offices of the Company are located at Dallas, Texas.

.....THE.....

Western Union Telegraph Co.

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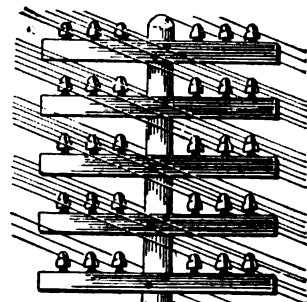
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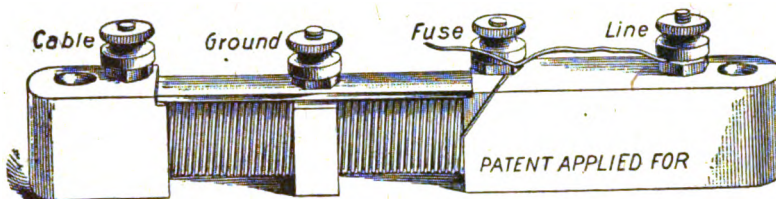
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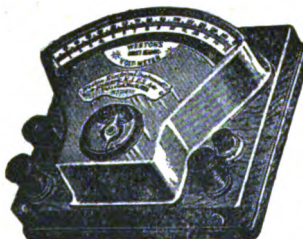
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TELEGRAPH AGE

No. 5.

NEW YORK, March 1, 1906.

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SOME POINTS ON ELECTRICITY.

The Dynamo—Series, Shunt and Compound Wound.

Part III.

BY WILLIS H. JONES.

For telegraph and other circuits arranged in parallel it is obvious that the value of the electromotive force of the dynamo which feeds them must remain constant regardless of the number of such circuits which may be connected at any given period. Otherwise the alterations in the value of the joint resistance of the variable number of conductors comprising the external circuit will cause the electrical pressure to drop or rise, as the case may be, to such an extent that the current value in each wire will fluctuate in volume and thereby become useless for telegraph apparatus. To avoid this contingency shunt wound machines are employed. The normal voltage of the dynamo is preserved by means of the shunt.

SHUNT WOUND MACHINE.

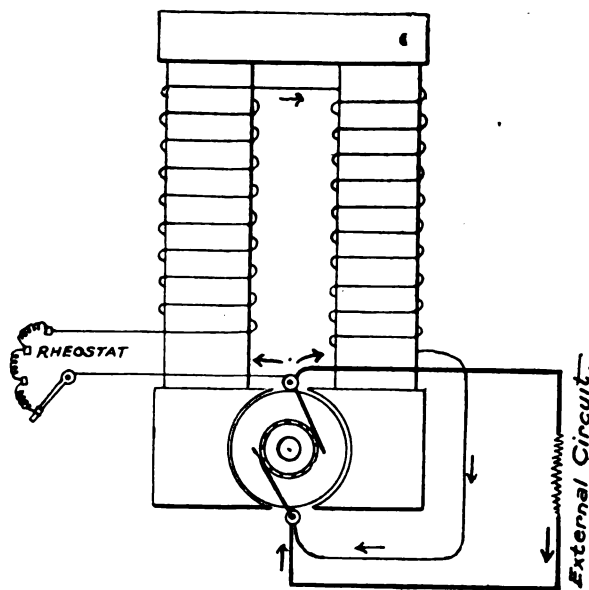
A glance at the accompanying diagram, Fig. 1, will show that the armature and the field magnet coils are connected in parallel. By this method part of the current generated by the machine passes through the field coil for the purpose of creating magnetic lines of force to be cut across

by the rotating armature coil.

The field magnet coil, or shunt as it is called in these machines, is composed of a great many turns of comparatively fine wire, the resistance of which, together with that of the rheostat connected in series therewith, is so proportioned that a field density will result which will consist of the correct number of lines of force required to create the desired value of electromotive force when the machine, unloaded, is running at normal speed.

When the machine becomes loaded, that is to say, feeding current to external circuits, the reaction set up in the armature due to the current flowing through its coils causes a slight drop in the electrical pressure owing to the diminished strength of the field magnet.

In order to gain compensation for this loss a sufficient amount of artificial resistance must be



SHUNT WOUND.

FIG. 1.

cut out of the rheostat to restore the required magnetic strength of the field by causing a greater volume of current to flow through the shunt.

The regulation of the rheostat may be accomplished either by hand, or automatically by means of a controlling magnet placed in series with the line circuit. For telegraphic purposes, however, it is usually done by hand as the drop in electromotive force between no load and full load should

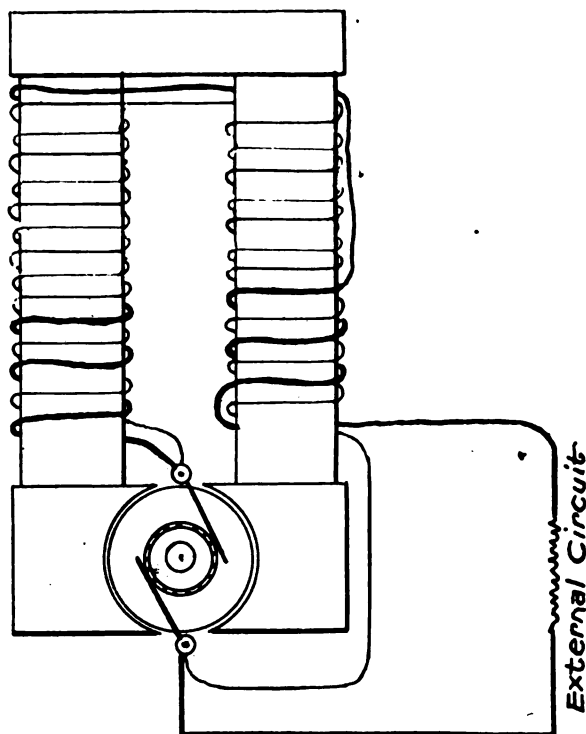
not exceed five per cent. in a properly proportioned shunt wound machine.

Telegraph apparatus in parallel circuits, therefore, would hardly be affected by so slight an alteration in electrical pressure. Shunt wound dynamos, it may be said, are practically constant potential devices and are also employed quite extensively for incandescent electric light circuits.

COMPOUND WOUND MACHINE.

Where very large volumes of current are demanded for electric lighting purposes the opportunities offered for great alterations in value arise so frequently and, at times, suddenly that it is preferable to compensate for the same automatically rather than depend upon the vigilance of the dynamo attendant.

This end is attained by the compound winding



COMPOUND WOUND.

FIG. 2.

shown in Fig. 2. It will be seen that the winding is the same here as in the ordinary shunt machine with the exception that a few turns of very coarse wire, indicated by the heavy lines, are also wound around the magnet over the fine wire field coil. These few turns are placed in series with the external circuit and are so proportioned that the volume of current it adds to or subtracts from the total magnetizing energy of the field magnet due to alterations in the volume of current in the main line is just sufficient to compensate for any loss or gain the field would otherwise be subjected to.

(Concluded.)

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Fast and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—The Quadruplex, March 16 to April 16, inc.; June 1 to July 16, inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power From the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16.]

The Old Western Union-Bell Telephone Contract.

Advices from Boston state that the long-drawn-out case of the Western Union Telegraph Company vs. American Telephone and Telegraph Company for an accounting involving from \$2,000,000 to \$4,000,000 has been before Everett W. Burdett as master for two years, and in that time only one side of the case has been heard—namely, the evidence of the Western Union, remarks the Electrical World. The Western Union Company completed its evidence a month ago, and it is expected that the American Telephone and Telegraph Company will at once proceed to present its evidence, in which event a report to the court may be made this summer.

The present case has been in the court in one form or another for twenty-two years, and doubtless it will be some time before a conclusive decision is reached. The Western Union Company seeks an accounting for certain shares of stock in the companies licensed by the old Bell Telephone Company under a contract entered into in November, 1879. The defendant was then known as the National Telephone Company. Under this contract the Western Union Telegraph Company was to go out of the telephone business and turn over all its telephone property and exchanges to the Bell Company, the latter agreeing not to interfere with the telegraph business. The Bell Company in consideration was to pay the Western Union upon all telephones used in the United States under license from the Bell Company a royalty, or bonus, of twenty per cent. for the term of seventeen years. After the contract was made, however, the Bell Company began to give exclusive licenses to sub-companies in various parts of the United States, in consideration of which the companies gave the Bell Company a certain percentage, generally thirty-five per cent. of their stock, as a payment for the license. It is in respect to this latter mode of procedure that the Western Union is securing an accounting.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

The Automatic Telegraph as a Public Utility.

BY ROMYN HITCHCOCK.

Means of distance communication are a most distinctive feature of advanced social and business life. The postal service has attained a high degree of development, while we also enjoy, although in a far lesser measure, the benefits of the telegraph and telephone. It is natural that letter communication should develop most rapidly, but it is remarkable that the most speedy of all means of communication should have made but comparatively little advance in method, in half a century. If the possibilities and benefits of rapid, cheap electrical communication had been early recognized by the people, all would now enjoy a means of exchanging letters in an hour or so, regardless of distance.

Unfortunately, even now the telegraph is not regarded as an universal utility, and therefore it has not felt the stimulus of a popular demand for rapid and cheap service. To the extent that it has become a necessity within a limited range of business, as for exchange and brokerage transactions, and for particular affairs requiring urgency it has become admirably adapted to these uses. The course of its development has been along restrictive lines, whereby its expansion into a great public utility has been prevented. It has been improved with special regard to the particular interests or demands which it serves so admirably in its present form, regardless of its greater applications and possibilities. The magnitude of the telegraph business is not large relative to the population or to the correspondence of any country.

The larger telegraph possibilities have not been generally recognized by either telegraph authorities or the people. So long as the methods in use suffice to transmit all the messages offered, managers see no reason for any great expansion of facilities by the use of superior methods. Well content with a limited business derived from a comparatively small number of persons who can afford to pay the charges, supplemented by the exactions from a still smaller number who use the telegraph only in emergencies which make it necessary, there seems no inducement to assume the expense of radical changes merely to favor a larger public. Therefore, while Morse key apparatus has been brought to a high point of excellence, the costly conducting system of wires is only utilized at the slow speed of hand transmission.

The assumption that because the apparatus in use suffices to do the business offered, therefore the limit of telegraph communication is already practically reached, is evidently false. It would place telegraphy in the unique position of an art which cannot be extended by improvement and cheapening. What is needed is not additional wires to increase facilities, but now methods and forms of apparatus which will effect very large economies, principally by utilizing conductors up

to their full carrying capacity and reducing the number of wires, incidentally by increasing the efficiency of the operating force.

A considerable reduction in the number of wires leads to economies of great importance. Not only is there a great saving in capital investment in copper and other items, but the stronger construction of lines, by reducing the weight and strains upon poles, also their height, not only cheapens the construction but materially affects the cost of maintenance. At the same time, interruption of communication due to damages from storms, will be reduced to a minimum and almost eliminated. For while it is impossible to put seventy-five or one hundred wires on a line of poles which will stand up against a bad wind-storm, it should not be difficult to string half a dozen wires on short poles which will withstand any vicissitudes of weather.

While the importance of increasing the working capacity of wires has long been recognized, it is to be noted that progress in this direction has been mostly confined to means of increasing the number of messages that can be simultaneously sent over one wire by a number of operators using the Morse key, to the neglect of the much more important problem of attaining the highest speed of signaling. It is truly remarkable how this tendency to keep speeds down to hand working persists. Consider the bearing of this fact in the light of capital investment: A wire costing \$30,000 is capable of carrying 1,000 words a minute, but the practical limit of quadruplex hand-sending is sixty words! Moreover, along with this increase in transmission speed there is certainly a doubling of the efficiency of the operating force, and an accuracy far beyond that of direct manual operation.

Telegrams may be broadly divided into two classes. In the first class belong those which require instant attention at both ends of the line, such as can only be given by operators in a constant communication with each other. To this class belong messages of brokers dealing in stocks, grain, etc., during the hours of active business on the exchanges, orders for train despatching, and certain particularly urgent communications. Each message is in the highest degree urgent and seconds of time are valuable. Such messages take precedence over other business. For these multiplex Morse working is highly advantageous, since several operators can be in constant communication over a single wire.

To the other class belong the great mass of ordinary commercial and social telegrams, which are not so quickly handled. It is for these, and also for a vastly greater number of communications which do not now go by wire, but which would if the cost were low enough, that high-speed automatic working is required, and to these the arguments here made particularly apply.

The duplex, quadruplex and the well-known Delany multiplex represent successive steps in multiplex evolution. In these, and in some later

devices, there is a limitation in speed for each pair of operators determined by the Morse key, which in practice is less than twenty words a minute. The editor of the "Electrotechnische Zeitschrift" published some comparisons of telegraphic speeds some time ago, giving the speed of Morse working at fifteen words a minute, the output of each operator being therefore seven and a half words a minute. In this country the quadruplex engages eight operators, four sending and four receiving, who together do not average over sixty words a minute. Therefore, while multiplexing a wire materially increases its earning capacity, the commercial efficiency of employees remains remarkably low.

This is no disparagement of the ability or faithfulness of operators. It is the actual commercial measure of their work, the average of telegraph key operating. And this is the result of half a century of development, a limitation of primitive, inefficient and imperfect hand manipulation. It represents the policy of private, monopolistic control, in the highest degree exemplified in the slow and unsatisfactory service of the United States. In other applications of electricity, as for light and power distribution, the economical use of expensive conductors is a prime factor in successful business. But the individual telegraph operator works no more speedily to-day over a wire than in the time of Professor Morse.

If communication by wire had developed in proportion to the development of railroads, for example, with corresponding demands for economical operation and low charges, hand methods would have been superseded years ago. Such development has not taken place because the idea of using the electric current for letter correspondence, or for any other purpose in communication than the transmission of messages at a high price for a small number of words, to be instantly delivered by special messenger, has not been grasped by the public. The notion has universally prevailed that telegraphic communication is necessarily expensive—that it must always be a restricted, emergency service. The idea of making electrical communication cheap so that all can afford to send letter-telegrams—messages of fifty or one hundred words—of business or social character, is opposed to ordinary conceptions.

(To be Continued.)

The Circuit Protecting Relay.

Among the more recently invented telegraph instruments is one which combines a small clock and a relay. This machine is designed to be placed in each office on the division of a railroad and connected to the train wire in place of the ordinary relay.

The circuit protecting relay is so constructed that the movements of the armature cause a small bar to move between the meshes of a wheel of the clock, and after the relay has been continuously on open circuit for a given length of time, as one minute, a catch is released. This allows

a series of contact points, which have been held apart, to come together in pairs.

One of these pairs is connected in series with an electric bell and battery. The others are connected to the binding posts of the switchboard where the line wires enter. When these contacts are together, the circuit of the cell is complete, and each line wire connected to this instrument is cut out of the office because the resistance of the wires from the board through the contacts is less than through the relays.

The result is that if a telegrapher fails to close the key of the train wire at the end of one minute each machine will act, cut the wire out of each office and start all bells ringing. If he happens to be out of the office no delay is occasioned to the handling of business on the wires, except that every office is cut out until the catch is replaced in its original position by each telegrapher. If the trouble had been caused by a plug falling out of the switchboard the result would have been the same. When the bell rings the operator naturally examines his switchboard and instruments in his office to see if the trouble is there; if not, the catch is replaced and business resumed.

If a wire other than the train wire is open, it may be closed by holding the train wire open the required time, for this will cut all wires out of each office until the telegrapher at that office inspects his instruments and replaces the catch. —C. G. Hadley, in *The Railroad Telegrapher*.

Wireless Telegraphy.

Lee De Forest, the well-known inventor of the wireless telegraph system bearing his name, was married to Miss Lucile Sheardown at the St. Regis Hotel in New York on February 17.

It is stated that Canada possibly leads the world in the utilization of wireless telegraphy as applied to signaling ships at sea. The marine department has now in operation 10 high-power and three low-power Marconi stations. The high-power stations cover the entire Gulf of St. Lawrence and the Atlantic Coast waters far seaward from Newfoundland to the Bay of Fundy.

The Panama Railroad has authorized the Atlantic De Forest Wireless Company to instal its wireless telegraph system on the steamers *Advance* and *Finance*, so that the whole fleet now plying between New York and Panama will thus be equipped.

The International Telegraph Construction Company has been awarded the contract at \$19,500 for furnishing six sets of wireless telegraph apparatus for the navy department.

By license of the postmaster-general, the Midland Railway Company of England is conducting a series of experiments in the vicinity of Derby to determine whether wireless telegraphy can be used in connection with its fast-train service between London and the north.

Report of the Mackay Companies.

The annual report of the trustees of the Mackay Companies was issued on February 15, and is as follows: The Mackay Companies owns the whole or part of the capital stock of seventy-four prosperous cable, telephone and telegraph companies in the United States, Canada and Europe, including the entire capital stock of the Commercial Cable Company and the various companies constituting the land line system, known as the Postal Telegraph. The Mackay Companies is one of the largest stockholders in the American Telephone and Telegraph Company, commonly known as the Bell Telephone Company. During the past year The Mackay Companies has acquired the control of the North American Telegraph Company, which for twenty years has owned and operated a telegraph system in Minnesota, Wisconsin, Iowa and Illinois, the stockholders of that company having exchanged a portion of their stock for preferred shares in the Mackay Companies.

The Mackay Companies has no debts.

Its authorized capital is \$50,000,000 preferred shares and \$50,000,000 common shares, of which there are outstanding \$40,645,600 preferred shares and \$41,380,400 common shares. During the past year the outstanding common shares have not been increased. The preferred shares have been increased by \$4,676,900, issued in exchange for stock in corporations, which, in addition to strengthening the position of the Mackay Companies, pays as much or more dividends than the corresponding dividends on the Mackay Companies' preferred shares. The Mackay Companies, in its investments, confines itself to first-class cable, telephone and telegraph stocks.

Quarterly dividends of one per cent. have been regularly paid on the preferred shares, beginning April, 1904, and semi-annual dividends of one per cent. have been regularly paid on the common shares, beginning January, 1905.

The income of the subordinate companies of the Mackay Companies is largely in excess of the amount required to pay these dividends, but its policy is to obtain from its subordinate companies only enough money to meet the dividends on the Mackay Companies shares. All surplus earnings are left in the treasuries of the subordinate companies for extensions and the development of the business and the increase of reserves.

During the year 1905 the earnings of the Commercial Cable Company have shown substantial gains in gross receipts and net profits, on both the ocean and land systems. After paying the dividends on its stock, a large amount remaining was carried to reserve, in accordance with its long-established policy. That company has, in addition, completed and put into operation a fifth submarine cable to Europe, and also established cable connections with Newfoundland, the business of which has been heretofore exclusively handled by other companies. The Commercial Pacific Cable Company has completed arrange-

ments for laying submarine cables to Japan from Guam, and to China from Manila, to be put into operation on or before April 1, 1906. The land line system (the Postal Telegraph) is being constantly extended, and shows increased gross receipts and net profits over the previous year.

The shareholders of the Mackay Companies in meeting assembled, at Boston, Mass., on June 15, 1905, by a vote of over four-fifths in interest of each class of shareholders, amended the Agreement and Declaration of Trust, under which the Mackay Companies was organized, so that the shareholders shall annually elect the trustees and the trustees shall annually make reports to shareholders.

The trustees of the Mackay Companies are: Clarence H. Mackay, William W. Cook, George G. Ward, Dumont Clarke and Edward C. Platt.

Annual Report of the American District Telegraph Company of New Jersey.

The annual report of the American District Telegraph Company of New Jersey, the annual meeting of which occurred on February 13, is as follows:

	1905	1904	Increase	Decrease
Earnings	\$2,534,697.55	\$2,389,970.78	\$144,726.77	
Expenses	1,842,879.12	1,661,176.32	151,702.80	See note
Profits	691,818.43	698,794.46		\$6,976.03
Dividends paid	390,049.00	389,959.00	90.00	
Surplus	\$301,769.43	\$308,835.46		\$7,066.03
Surplus last statement		\$420,172.98		
Surplus 1905		301,769.43		
Total surplus		\$721,942.41		\$721,942.41
Appropriated for construction—last statement		\$364,302.88		
purchase of new property, etc		1905 310,832.34		\$675,135.22
Balance				\$46,807.19

Note.—The increase of expenses for the year 1905 was due to an amount of reconstruction in some of the old plants acquired by the company.

ASSETS.

Plants, franchises, stocks, patents, etc.	\$9,754,784.80
Capital account	675,135.22
Burglar alarm equipment factory	7,846.81
Supplies in stock and in transit	57,664.62
Cash in treasury and due from offices	112,005.48
Accounts receivable	72,981.50
	\$10,680,418.43

LIABILITIES.

Capital stock issued	\$9,754,784.80
Accounts payable, including dividend of January, 1906, \$97,515	203,691.22
Profit and loss	721,942.41
	\$10,680,418.43

The old board of directors and officers were re-elected.

We desire to state that back numbers of this paper, those issued more than six months prior to any current date, will be charged for at the rate of twenty-five cents apiece when they can be furnished. This price is fixed because of the necessarily limited stock we carry, and of the difficulty we sometimes have in filling an order. Oftentimes the request is for papers of a more or less remote date, with the expectancy of being charged at but ten cents a copy, whereas in order to obtain the desired issue we are ourselves frequently obliged to pay the larger sum, or even more. The growing value of complete files of TELEGRAPH AGE should cause our readers to carefully preserve their issues.

Phillips' Code is standard. It should be in the hands of every operator. Price, \$1.00.

Obituary.

Major J. W. Thomas, president of the Nashville, Chattanooga and St. Louis Railroad Company, died in Nashville, Tenn., on February 12. Major Thomas was an old time telegrapher.

O. E. Madden, well-known in telegraph and electrical circles in New York, died on February 13, at the age of sixty years. Mr. Madden was for a number of years assistant general manager of the American Bell Telephone Company and was quite active in developing telephone interests in the pioneer days of that industry. Afterward he was in the electrical and telegraph supply business in New York City.

Henry Clay Ross, aged fifty-five years, at one time a well-known railroad telegraph operator, but for the past twenty years private secretary to the general superintendents of the Pennsylvania railroad, at Jersey City, died at his home in Roseville, N. J., on February 17. The funeral was attended by many old telegraphic friends.

Edward P. Caut, of the Western Union Telegraph Company, Chicago, Ill., died on February 15.

Recent Telegraph Patents Granted.

811,994. Telegraph-transmitter. John C. Barclay, New York City, assignor to the Western Union Telegraph Company.

812,142. Fac-simile telegraph. Edward E. Kleinschmidt, New York, N. Y.

811,995. Printing mechanism. John C. Barclay, New York, N. Y. An electric typewriter of essentially Blickensderfer type, except that the usual bails which actuate the type wheel are controlled by power magnets, and the selector finger is likewise controlled by selector magnets.

811,996. Relay. John C. Barclay, New York, N. Y. A contact is swiveled to rock into engagement with two brushes and such swiveling movement is produced by a lever vibrating between two electro-magnets.

812,773. Telegraph instrument. Carl J. Schwarze, Adrian, Mich., assignor to the Schwarze Electric Company, Adrian, Mich. The instrument comprises an electro-magnet, a vibratory armature therefor, spring means controlling the armature and holding it normally retracted, a stop against which the armature is normally held and a closed induction coil on the electro-magnet.

812,557. Method of receiving telegraphic signals. Stephen D. Field, Stockbridge, Mass. The method of signaling consists in initially transmitting high-frequency waves, divided into separate impulses, to a coherer, establishing a circuit including a local battery through the coherer by means of the periodic currents, whereby the currents are transformed into single impulses in the local circuit, subjecting a mechanical vibrator having a gradually changing periodicity to the impulses and finally fixing the periodicity of the vibrator.

812,183. Telegraph key. William O. Coffee, Cleveland, O., assignor to Benjamin F. Bellows, Cleveland, O. A gravity vibrator is adapted to swing by its own tendency and thereby make and break the circuit. A finger key releases the vibrator and an adjacent finger key opens and closes the circuit independently of the vibrator.

Business Notice.

Sears, Roebuck and Company, the great mail-order house of Chicago, write us that they have found it necessary on account of their rapidly increasing business to still further enlarge their enormous forty-acre plant with its fifty acres of floor space. The volume of business done by this enterprising firm is phenomenal. Their sales last year were about forty million dollars, more than the sales of the next five largest mail-order houses combined. Their new big general catalogue, just out, is a wonderful book. Their low prices on the highest quality of all kinds of merchandise are astonishing. Their liberal and newly revised profit-sharing plan by which customers share so largely in their profits, is the most liberal plan ever adopted by any business house. The big catalogue showing all of their new offers and plans is free for the asking. Their big catalogue can be found in every neighborhood, but if you cannot find one they will gladly send you a copy by mail, postpaid, free, if you write and ask for it.

Our endorsement in the largest measure of this great concern is given to our readers and we point with pride to Sears, Roebuck and Company as a firm in which everyone can place the fullest confidence and as an example for business institutions throughout the world.

Municipal Electricians.

The executive committee of the International Association of Municipal Electricians met at New Haven, Conn., on February 22. Among those present were Mr. Jerry Murphy, of Cleveland, O., president of the association; Frank P. Foster, of Corning, N. Y., secretary of the association; T. C. O'Hearn, of Cambridge, Mass., chairman of the executive committee, and A. F. N. Kittridge, of New Haven, Conn. It was decided to hold the next annual convention on August 15, 16 and 17 at New Haven.

A patent, No. 812,733, police signaling apparatus, has been granted to Charles L. Foster and Peter K. Higgins, Los Angeles, Cal. In combination with a normally open signal circuit having signals therein are controlling-circuit patrol boxes through which the controlling circuit passes, a central station and a relay in the controlling circuit having one side connected in series through each patrol box to ground and the other side connected to line leading into the central station. An armature for the relay is connected in the signal circuit and adapted to close the circuit when the relay is energized.

A patent, No. 812,776, automatic fire alarm, has been granted to Alfred Taylor, Victoria, Canada.

Personal Mention.

Mr. Charles R. Hosmer, of Montreal, formerly manager of telegraphs of the Canadian Pacific Railway, accompanied by his wife, sailed from New York for southern Italy on February 17.

Colonel B. W. Wrenn, president of the Auto-Car Company of New York, was for over thirty years a prominent telegrapher and railroad official in the South. At the age of fifteen he entered the service of the Orange and Alexandria Railroad, at Culpepper, Va., as telegraph operator. This was in April, 1862, when the war movements were in full play about him and the situation he held was both eminently important and eminently dangerous. While thus engaged at Culpepper he was the last person to converse over the wires with Alexandria, Va., before its occupation by the United States troops. He vividly recalls the episode. Another incident worthy of mention is that after he had fallen back and become an operator in the Richmond office, he was the one who received the last telegram sent by Gen. Robert E. Lee to Jefferson Davis.

Recent New York Visitors.

Mr. W. S. Burnett, general manager of the Morse Code Signal Company, Milwaukee, Wis.

Frank P. Foster, superintendent of electricity, Corning Glass Works, and secretary of the International Association Municipal Electricians, Corning, N. Y.

Mr. Jerry Murphy, superintendent Police Telegraph, Cleveland, O.

The Railroad.

Officials of the Pennsylvania Railroad are testing a device, invented by C. M. Miller, a telegraph operator, for coaling locomotives while under full speed. It is said that the initial tests have proved successful and fuller tests are soon to be made.

In order to doubly safeguard traffic on the Oregon Railroad and Navigation Company's road, a system of telephones will be established all over the line in connection with the telegraphic communication. E. A. Klippel, superintendent of telegraph, is supervising the installation of the telephones, and the work will be completed as rapidly as possible. Telephone instruments and induction coils will be installed in each telegraph office along the line, and cabooses will be equipped with telephone instruments.

Announcement is made of the appointment of William A. Gardner to be vice president of the Northwestern in charge of all operation of the system. Mr. Gardner has been operating the road since 1890 as general manager. He began his service with the road in 1878 as a telegraph operator.

The Railway Signal Association, H. S. Balliet, secretary and treasurer, with offices at 335 Madison Avenue, New York, holds five meetings a

year. The printed proceedings for 1905 which have already been distributed among the members make a valuable addition to the literature bearing on the telegraph and signals on railroads.

The headquarters of Mr. A. B. Taylor, superintendent of telegraph of the New York Central and the West Shore railroads, have been removed from Weehawken, N. J., to the Grand Central Station, New York. In our previous issue we stated that Mr. Taylor had to do with the electrification of the New York Central terminal zone. As a matter of fact his connection with the electrification concerns only the use of the telephone in its adaptation to the work.

Resignations and Appointments.

The following changes have occurred in the service of the Western Union Telegraph Company:

Mr. C. H. Walton, of the Washington, D. C., office has been appointed manager of the company at Albany, Ga.

Mr. T. P. Masters, of the Canadian Pacific Railway Telegraphs, Vancouver, B. C., has been appointed manager of the Victoria, B. C., office.

The following changes have occurred in the service of the Postal Telegraph-Cable Company:

E. F. Carter has been appointed manager at Mojave, Cal., vice C. A. Horsman resigned.

Miss Violet Barwise has been appointed manager at Ontario, Cal., vice Miss Minnie Kunnick, who has been transferred to Riverside as assistant manager.

Mr. H. F. Williams has been succeeded by J. A. Tarr as manager at Kingman, Ariz.

Mr. C. R. Palmer has been appointed manager at Williams, Ariz., vice J. E. DeRosear resigned.

Mr. C. Seely has been appointed assistant manager at Santa Barbara, Cal.

Mr. M. Cline has been appointed assistant manager at San Diego, Cal.

Miss B. Booton has been appointed manager of the new office in the Alexandria Hotel at Los Angeles, Cal.

Mr. J. Dion has been appointed manager of the San Bernardino, Cal., office, vice Miss Booton transferred.

The German army, which already has three battalions of telegraph operators and one of aeronauts, is to be provided in the near future with a volunteer corps of chauffeurs. At first it was proposed to establish an automobile post station, but the project was abandoned on account of the great cost it would involve. The volunteer automobile corps is to be recruited from among the members of the German Automobile Club, and it is limited to the Prussian provinces and the states whose military contingent is under the direction of the Berlin authorities.

The Care of Storage Battery as Used for Signaling Devices.*

H. W. LEWIS.

*Read before the New York meeting of the Railway Signal Association, January 9.

The able paper presented by Mr. E. L. Adams at the annual meeting, Niagara Falls, October, 1905, brings out the suggestion that it would be well to encourage some discussion on this subject. Acting on this suggestion, I submit the following:

While it is hardly necessary to go into the subject of installing storage battery, I might mention that the instructions furnished by the various battery manufacturers are very complete and if followed to the letter no trouble will result thereafter.

It is very important that the initial charge should be full and complete and for that reason it should be continued until both the specific gravity and voltage cease to rise, then discontinue the charge and immediately adjust the electrolyte to the proper density as recommended by the manufacturers and mark the height of the electrolyte, as this gravity on the cells (a file mark is preferable, as it is permanent) then discharge the battery about half and follow this discharge by a regular eight-hour charge, keeping the electrolyte at the proper height during this charge by the addition of distilled or other known chemically pure water to compensate for the water thrown off by evaporation, and if at the end of the charge the specific gravity has risen to the fixed density and remained there for at least half an hour, it will insure beyond a doubt that the battery is fully charged.

In commission the writer has found the only reliable indication of charge and discharge to be the specific gravity of the electrolyte, while no fixed figure can be laid down, it can readily be ascertained in each individual battery by observing the lowest specific gravity at which the device can be operated at the minimum voltage on closed circuit. This once attained and a reasonable margin allowed, a fixed minimum specific gravity is established. I have found that charging on this basis, and everything going smoothly, we are able to designate regular days for charging.

As the density of the electrolyte varies materially with the temperature, it is therefore necessary to note that a battery having a specific gravity of 1.200 when fully charged at 60 deg. F. would need to be of nearly 1.300 specific gravity at a temperature of 30 deg. F. and nearly 1.190 at a temperature of 100 deg. F., and so on. In general no attention is paid to housing batteries with a view to a uniform temperature, and therefore it is an all important feature that the temperature be watched as well as the specific gravity during charge and discharge and that the electrolyte be maintained at the predetermined height and adjusted at a temperature of 60 deg. F.

The irregular discharge rate to which batteries are subjected in this line of work has a great deal to do with amount of current required to recharge them, the discharge varying from hours to days, weeks and months. I might cite a battery whose discharge covers a period of six and one-half days and as a rule it requires twelve hours at the normal rate to charge it; another whose discharge continues for thirty-nine days requires twenty-nine hours at normal rate, while a battery discharged in two or three days can readily be charged in eight or nine hours at normal rate, the efficiency of such batteries is greatly reduced.

It is very important that batteries in this class of work are not discharged too low, as I have found that in this condition they sulphate more rapidly and there is grave danger of buckling the position plates on charge, the only cure in sight for this bothersome sulphate being incessant charging. This, of course, does the battery no good, as the sulphate falling carries quite a lot of material with it.

It has been suggested, that the addition of sodium sulphate to the electrolyte would to some extent prevent this sulphating, and in conclusion I would like our battery friends to tell us, if in adding to this, would it injure the battery and if not, what percentage should be added and in their opinion would it be warranted?

The Destructiveness of the Teredo.

One of the greatest enemies in the world to wood is the insect known as the Teredo navalis. It is really an animated auger, for it will bore through the hardest species of trees unless they are protected from its pointed head. It will practically destroy a telegraph pole in the course of two or three years, unless it is protected by being soaked in creosote or some similar substance. Creosote is a product of distillation of coal-tar. It is an oily fluid, having wonderful antiseptic and preservative properties. The teredo is a native of tropical climates, but as far north as Oregon its destruction is apparent.

Thomas A. Edison's Prediction.

Mr. Thomas A. Edison, who has just rounded out his fifty-ninth year, on February 11, states that the world is now on the threshold of another wonderful era—a golden electrical age. That the discovery of a direct process for harnessing the energy stored in coal will be made and marketed during his lifetime he asserts with confidence. He expects to live long enough "to see the air populous with ships, to hear of many a Nautilus speeding under seas, to witness the arrival and departure of three-day ocean liners, to board trains operated at a fraction of their present cost and far exceeding those of to-day in speed, to perhaps discover the secret of life in radium, and to see the automobile become the dray and carriage of the world."

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NEW YORK, MARCH 1, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientele. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The Military Telegraph Pension Bills.

After many years of persistent effort to obtain from Congress some recognition of the claim for pensions for the civil war telegraphers there now seems to be strong probability of success. The Senate has passed a bill to extend the provisions of the pension laws to the war telegraphers, and in the House of Representatives a similar measure has been presented and is now in committee.

No one who has given the matter any thought can deny the justice of the claims of the telegraph veterans for recognition similar to that accorded the soldiers of the rebellion. The telegraph corps constituted a highly important branch of the military service, and the individual sacrifices, hardships and dangers were as real as those of the "man behind the gun."

Now that success seems practically assured, a grand final effort should be made to make it

certain. This can be done by appealing to Congressmen. Every one interested in these measures should personally write to his Congressman, pointing out the justice of the claims and urging favorable action when the bill is presented for the final vote. The campaign has been carried on by comparatively few individuals, who have gone into it with heart and soul. When success does finally crown their efforts the many will receive their share of the benefits. Everyone interested should now write and complete the noble work and secure the justice that has so long been withheld from them.

Benjamin Franklin.

Probably no one name linked with the development of electrical science stands out in bolder relief than that of Benjamin Franklin. This remarkable man, who was at once a statesman, philosopher, educator, writer, philanthropist, inventor and electrician, was the connecting link in scientific thought between the first half of the nineteenth century, during which period the world remained in comparative inactivity in respect to scientific achievement. As a scientist he was ahead of the times; the world was not ready for his work. But it is said that ideas are never lost, and this fact was amply verified in Franklin's case. When, toward the middle of the nineteenth century, scientific thought began to reawaken, Franklin's splendid work in science became recognized, and it has ever since stood out prominently in history, and always will.

Franklin's most famous work in science was the kite experiment, which demonstrated the relationship between lightning and electricity. His first important experiments were with the Leyden jar for the charging of which he designed and constructed a static machine. The one fluid theory of electricity was held by him, and it was he who first announced the theory that a pointed lightning rod gradually draws off the electricity in the atmosphere, thus dissipating it and rendering it harmless. In this connection it is interesting to note that a lightning rod erected in Portsmouth, N. H., under Franklin's direction, was still in use a few years ago.

The birth and the development of the telegraph were made possible by Franklin's achievements, and considering the fundamental character of his scientific work the title "Father of Electricity" is a peculiarly fitting one.

Charles M. Schwab, the great steel magnate, has this to say in a letter of advice to young men:

"Go yourself to seek work in life and depend upon your own exertions and merits. No matter what business you enter, the essential feature of success is that you perform your task better than anybody else. This alone will command attention. Everybody is expected to do his duty, but the boy or man who does a little more, is certain

of promotion. I want to state, that of the truly great men I know in industrial or mechanical lines, not one is a college-bred man, but they are men who received an industrial or mechanical education and worked up by perseverance and application.

"Let me advise you all to make an early start in life. The boy with the manual training and common school education, who can start in life at sixteen or seventeen, can leave the boy who goes to college till he is twenty or more, so far behind in the race, that he can never catch up. My parting advice is to start early."

"Telemobiloscope."

An inventor in Dusseldorf, Germany, has designed an instrument which he terms a "telemobiloscope." By its means, it is claimed, a pilot is enabled to detect a ship near at hand in a fog, depending upon the fact that electric waves are reflected when they strike a metallic object. The apparatus consists of a long box or tube, pivoted at one end and open at the other, containing a spark generator near the pivoted end and two lenses for collecting the electric waves. A suitable motor turns the box horizontally on the vertical pivot. As the box, slightly inclined toward the water, is swung around, the electric waves are projected outward, and if they strike an object containing metal they are reflected back, acting upon a receiver similar to that used in wireless telegraphy. This receiver is influenced only by return waves. When a vessel is discovered, the apparatus is turned until the reflection is strongest, when a good estimate of the distance can be made.

The Cable.

The proposal received some time ago by the Government for the purchase of the Alaskan telegraph and cable system by Seattle interests, has been rejected. It now appears that the parties desiring to acquire the system control a telephone system in the Nome peninsula, and wanted the government to turn over its system to them gratuitously with the privilege of purchase at the end of twenty-five years—a proposition evidently without warrant. Further, the system could not be disposed of without authority of Congress, and the chief signal officer of the army recommended that, if in the future it was desired that the government relinquish its control, an upset price be set and bids be called for the purchase of the system.

Guam-Manila cable, reported interrupted February 21, was restored the same day. The interruption was caused by accidental injury at the Manila end.

The Churillos - Iquique - Valparaiso duplicate cable, which is 1,659 knots in length, has been laid by the cable steamer Faraday, for the Central and South American Telegraph Company. The work was begun in January and finished on February

7. This cable completes a duplicate system of cables owned by this company from Selma Cruz, Mexico, to Valparaiso, Chile.

By the death of M. Despecher, who passed away on January 29, at the age of 83 years, submarine telegraphy has lost another of its pioneers. For more than half a century he has been the organizer of all submarine cable enterprises created between the French Government and the English companies before France possessed factories capable of constructing cables and laying them. With Sir John Pender, Mr. Cyrus W. Field, and Sir George Elliot, he organized the first cable between Europe and America. M. Despecher was, in 1861, one of the promoters of the cable between France and Corsica.

In a review of 1905, the Journal Télégraphique enumerates schemes for laying cables, the carrying out of which will be completed in 1906, and succeeding years. Among these is a submarine cable to be laid by the United States Government to the Isthmus of Panama, one by the Mexican Telegraph Co. between Galveston and Coatzacoalcos, and others by the Central and South American Telegraph Co., between Churillos, Iquique and Valparaiso.

The North Eastern Siberia Company is to open up a landline system between the United States, Siberia, China and Europe, and a landline is to be erected across the Sahara to connect Algeria and Southern Nigeria.

If a bill introduced at Washington by Congressman Wanger, of Pennsylvania, becomes law, the Government will embark in the telegraph and cable business in the West Indies. The bill appropriates \$1,000,000 to construct a cable from Key West, Fla., to Guantanamo, Cuba, and thence to the canal zone on the Isthmus of Panama. A branch line from Guantanamo to Porto Rico is also provided for.

Cables Remaining Interrupted February 26.

Port Arthur-Chefoo, interrupted March 9, 1904; Cadiz-Teneriffe, interrupted July 20, 1905; St. Jacques-Haiphong, interrupted February 14, 1906; Tangier-Cadiz, interrupted February 18, 1906; Jamaica-Colon, interrupted January 9, 1905; Martinique-Porta Plata, interrupted October 30, 1905; Cayenne-Pinheiro, interrupted August 13, 1902; Curacao-Venezuela interrupted. See Trinidad. (While Trinidad is cut off only way to Venezuela is by mail from Curacao), January 12, 1906; St. Lucia-St. Vincent and St. Vincent-Grenada interrupted, cutting off St. Vincent and Barbados, February 16, 1906; Grenada-Trinidad interrupted, cutting off Trinidad and Demerara, February 22, 1906; Porto Rico-St. Croix and Porto Rico-St. Thomas, interrupted February 24, 1906. These interruptions cut off all West India Islands beyond Porto Rico.

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Two Centuries After Franklin.

On the 17th of January occurred the bicentenary of Benjamin Franklin. Not only has posterity assigned to him his rightful position among the greatest and ablest of Americans, but foreigners as well early recognized those qualities of his masterly intellect which placed him among the foremost statesmen and men of science and letters. Undoubtedly his fame rests chiefly upon his public career, his services to his country as a statesman, diplomat, and patriot. An historical figure of international fame, his scientific attainments are overshadowed by his political eminence. And yet, the results of his scientific researches and investigations easily place him in the very front rank of scientific men of the world.

Few, indeed, of us have a proper appreciation of Franklin's work in natural philosophy and electricity. It is true that his classic experiment to prove the identity of lightning and electricity is known the world over; but so general is the ignorance of his other scientific labors, that this great discovery is often regarded merely as a fortuitous and chance occurrence. The utter absurdity of this belief needs no further proof than even slight acquaintance with his painstaking and unrelenting study in this as well as other directions; and it is unquestionably true that this experiment was not the origin of a theory, but that it was the culminating test of a line of theoretical reasoning and investigation. Franklin's interest in things scientific was limited in range only by the limits of the knowledge of his time. His splendid versatility and intense interest in all phases of human endeavor led him into branches of knowledge where his remarkably practical mind and sound judgment produced contributions to science of undisputed value. So, his early investigations of chimney drafts were soon followed by the invention of a stove which embodied the principles of the modern hot-air furnace and other devices of like character.

A subject which at this time possessed a peculiar fascination for him was meteorological investigation, and his knowledge and understanding of the general physics of the atmosphere were far in advance of his period. Franklin was probably the first to institute our present methods of tracing and recording storms from point to point, and his investigations of the Gulf Stream, for the first time using thermometric means of verification, were of great value to navigators. No strange occurrence or natural phenomenon was allowed to pass without investigation by the best means at his command. Thus his friend Priestley, in making public the account of his discovery of oxygen, at the same time published a letter from Franklin telling of an inflammable gas found in certain American rivers, known to-day as marsh gas.

Franklin's studies in electricity were, however, carried out further and more thoroughly than his various activities permitted him to do with other branches of knowledge, and upon his electrical in-

vestigations rest his great claims to fame as a scientist. His introduction to this branch of science, then beginning actively to engage the attention of men of learning in Europe, was through a Dr. Spence of Boston, who possessed some crude apparatus and was acquainted with the work that had been done abroad. Franklin's interest was at once aroused, and his natural inclination to philosophic study of this character soon induced him to make electrical research one of the prime objects of his life, and a hobby which he did not relinquish until his death. Collinson, the English agent of the Library Company of Philadelphia, and the personal friend of Franklin, supplied him with existing English literature on the subject, and soon sent him Dr. Watson's book, as well as one of the tubes used in the experiments. Franklin eagerly took up the closer study of electrical phenomena, and in 1747, with three others, Kinnersley, Hopkinson and Sing, conducted the famous "Philadelphia experiments," showing the "effect of pointed bodies both in drawing off and throwing off electrical fire." It is almost certain that in these investigations Franklin copied very little from the European investigators; in fact, his scientific surroundings in America almost precluded this possibility. In all probability, he at this time reinvented the static electrical machine for his own use. His splendid fertility of resource and unflagging energy are demonstrated in no better way than in these experiments, hampered by insufficient apparatus and ignorance of what had already been done, but even so, outstripping the work of the best continental scientists.

Franklin evolved the electric fluid theory acceptable to the non-mathematical mind almost to our day. His work with the Leyden jar was classic, and with his experiments begins the forging of the link between this and the voltaic cells.

In 1748 he decided to retire from public life and business, to devote his entire time to electrical study and research. With this purpose in view he sold his newspaper, almanac, and printing house, and the result of this sale, with the fortune he had previously amassed, enabled him to settle down to conduct his experiments unhampered by lack of time, until again called into public activity a few years later. The work on the Leyden jar was continued with marked success, and at this time Franklin was undoubtedly in advance of most foreign electricians. He conceived and used the arrangement of electrical sources in series, a method hitherto unknown. Further, he made the important discovery, and proved it, that the charge of the jar lies near the surface of the glass itself and not in the metal as had been believed.

Unquestionably, his greatest success was in proving that lightning is an electrical phenomenon. As early as 1746, John Freke, a Scotchman, followed by other scientists, formulated this hypothesis, and unsuccessfully attempted its proof. In all probability, Franklin did not know much

about these other theories, and his conception of the identity appears to have come to him early in his investigations, during certain of which he painstakingly observed and noted all the characteristics apparently common to a flash of lightning and an electric spark. In 1749 he sent to Collinson his two famous communications, making known his belief in this identity. Outlined in these letters was a theory of the causes of atmospheric electricity, ingenious though incorrect, which he soon abandoned. He continued his experiments through the summer, and in July of the following year he again sent a long communication to Collinson, giving an account of the experiments in which the invention of the lightning rod is set forth, and outlining a plan for proving that lightning and electricity are of the same character. Collinson recognized the value of the account, and attempted to secure its publication in the *Journal of the Royal Society*. The Society was not well disposed toward Franklin, and refused to entertain the idea. Cave, the great London publisher, denied the letter space in his *Gentleman's Magazine*, but consented to print it in book form. This was done, and the publication in 1751 was soon followed by a French translation. The importance of the experiments was recognized in France; and while Franklin, continuing his investigations, was pondering on how to conduct his projected lightning rod test himself, he learned that it had been successfully carried out by French savants. How this had been done he did not know. He was only acquainted with the bare fact of the accomplishment. Nevertheless, he set to work and soon evolved the kite experiment, which made him famous the world over, and which was followed by his election as honorary member to most of the learned societies of Europe, including the Royal Society of England.

It has been held that had Franklin been able to devote his entire time to science, had his studies been pursued in an environment more suited to work of this kind, and had his opportunities for acquiring scientific erudition been more favorable, his fame to-day would rival that of the greatest natural philosophers the world has seen. He was essentially the practical man, of politics, of letters, of science, and this characteristic, coupled with sound common-sense and judgment, led him constantly to attempt the realization of scientific principles for purposes of practical utility. His mental attitude was one of unselfishness, of insensibility to ridicule, and carelessness of praise, as witnessed by the characteristic indifference with which he regarded the early shortsighted attitude of the Royal Society. The recognition of Benjamin Franklin's worth and eminence as a patriot, as a statesman, and as a writer cannot be too great, nor can it be too general, but in our appreciation we must not forget what Franklin's work as thinker and investigator has meant to science, the abstract, and to science as applied to the utilities of ordinary life.—Scientific American.

A Drain on Forest Resources.

With the life of telephone and telegraph poles at its present limit, the 800,000 miles of existing lines in America, requiring 32,000,000 poles, must be renewed approximately four times before trees suitable to take their place can grow. A pole lasts in service about twelve years, on the average, but is made from a tree about sixty years old. In other words, to maintain a continuous supply five times as many trees must be growing in the forest as there are poles in use. The severity of this drain upon forest resources by the telephone and telegraph companies is obvious enough. Just as in the case of railroad ties, the question of pole supply has thrust itself into prominence. To lengthen the life of poles, and in this way to moderate demand and conserve future supplies, have become important matters, affecting the public as well as private interests.

Since 1902 the Forest Service has been making a study of the preservative treatment of poles and of the value of the seasoning in relation to treatment. In this work its first object has been, as in its studies of cross-ties and construction timbers, to make the timber last as long as possible, so as to check the annual demand for renewal, and thus lessen so far as possible the drain upon the forest. Co-operating with telephone and telegraph companies, railroads, lumber companies, and individuals, it has urged forward a series of experiments covering all phases of the problem, from the question of the best season for cutting, through subsequent stages of handling, to the final setting of the pole. Some of the most important results obtained deal with the seasoning process.

Seasoning was studied in the first place to determine the rate at which poles become air dry; that is, lose as much moisture as they will part with through evaporation in the open air. The time of cutting was also carefully considered. Experiment proved that poles cut in winter dry more regularly than those cut at other seasons, and also show a greater loss in moisture at the end of six months' seasoning. The advantages of winter cutting are, therefore, even drying, with a minimum liability to check, and light weight—an obvious advantage for shipment by freight. Spring or summer cutting secures a more rapid loss of moisture at first, owing to the temperature, but only for three or four months. At the end of from six to eight months spring and summer cut poles are found to have dried only three-quarters as much as the winter-cut poles. Spring and summer cutting, however, would result in saving in freight and increased durability if the poles are to be shipped and used within three or four months after cutting.

TELEGRAPH AGE should go regularly to every one interested in the telegraph. Write for a sample copy.

THE DURABLE SATISFACTIONS OF LIFE.

Part of an Address by Charles William Eliot,
President of Harvard University.

"For educated men what are the sources of the solid and durable satisfactions of life? That is what I hope you are all aiming at—the solid, durable satisfactions of life, the satisfactions that are going to last and grow. So far as I have seen, there is one indispensable foundation for the satisfactions of life—health. A young man ought to be a clean, wholesome, vigorous animal. That is the foundation for everything else, and I hope you will all be that, if you are nothing more. We have to build everything in this world of domestic joy and professional success, everything of a useful, honorable career, on bodily wholesomeness and vitality.

"This being a clean, wholesome, vigorous animal involves a good deal. It involves not condescending to the ordinary barbaric vices. One must avoid drunkenness, gluttony, licentiousness and getting into dirt of any kind in order to be a clean, wholesome, vigorous animal. Still, none of you would be content with this achievement as the total outcome of your lives. It is a happy thing to have in youth what are called animal spirits—a very descriptive phrase; but animal spirits do not last even in animals; they belong to the kitten or puppy stage. It is a wholesome thing to enjoy for a time, or for a time each day all through life, sports and active bodily exercise. These are legitimate enjoyments, but if made the main object of life, they tire. They cease to be a source of durable satisfaction. Play must be incidental in a satisfactory life.

"What is the next thing, then, that we want in order to make sure of durable satisfactions in life? We need a strong mental grip, a wholesome capacity for hard work. It is intellectual power and aims that we need. In all the professions—learned, scientific or industrial—large mental enjoyments should come to educated men. The great distinction between the privileged class to which you belong, the class that has opportunity for prolonged education, and the much larger class that has not that opportunity, is that the educated class lives mainly by the exercise of intellectual powers and gets therefore much greater enjoyment out of life than the much larger class that earns a livelihood chiefly by the exercise of bodily powers. You ought to obtain here, therefore, the trained capacity for mental labor, rapid, intense and sustained. That is the great thing to get in college, long before the professional school is entered. Get it now. Get it in the years of college life. It is the main achievement of college life to win this mental force, this capacity for keen observation, just inference and sustained forethought, for everything that we mean by the reasoning power of man. That capacity will be the main source of intellectual joys and of happiness and content through a long and busy life.

"But there is something more, something beyond this acquired power of intellectual labor. As Shakspeare puts it—'the purest treasure mortal times afford is spotless reputation.' How is that treasure won? It comes by living with honor, on honor. Most of you have begun already to live honorably, and honored; for the life of honor begins early. Some things the honorable man cannot do, never does. He never wrongs or degrades a woman. He never oppresses or cheats a person weaker or poorer than himself. He never betrays a truth. He is honest, sincere, candid and generous. It is not enough to be honest. An honorable man must be generous; and I do not mean generous with money only. I mean generous in his judgments of men and women, and of the nature and prospects of mankind. Such generosity is a beautiful attribute of the man of honor.

"How does honor come to a man? What is the evidence of the honorable life? What is the tribunal which declares at last—'This was an honorable man'? You look now for this favorable judgment of your elders—of parents and teachers and older students; but these elders will not be you final judges, and you had better get ready now in college to appear before the ultimate tribunal, the tribunal of your contemporaries and the younger generations. It is the judgment of your contemporaries that is most important to you; and you will find that the judgment of your contemporaries is made up alarmingly early; it may be made up this year in a way that sometimes lasts for life and beyond. It is made up in part by persons to whom you have never spoken, by persons who in your view do not know you, and who get only a general impression of you; but always it is contemporaries whose judgment is formidable and unavoidable. Live now in the fear of that tribunal—not an abject fear, because independence is an indispensable quality in the honorable man. There is an admirable phrase in the Declaration of Independence, a document which it was the good fashion of my time for boys to commit to memory. I doubt if that fashion still obtains. Some of our public action looks as if it did not. 'When in the course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth the separate and equal station to which the laws of Nature and of Nature's God entitles them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation.' That phrase—a decent respect—is a very happy one. Cherish 'a decent respect for the opinions of mankind,' but never let that interfere with your personal declaration of independence. I have said begin now to prepare for the judgment of the ultimate human tribunal. Look forward to the impositions of your life. They are nearer than you are apt to imagine. It is a very safe protective

rule to live to-day as if you were going to marry a pure woman within a month. That rule you will find a safeguard for worthy living. It is a good rule to endeavor hour by hour and week after week to learn to work hard. It is not well to take four minutes to do what you can accomplish in three. It is not well to take four years to do what you can perfectly accomplish in three. It is well to learn to work intensely. You will hear a good deal of advice about letting your soul grow and breathing in without effort the atmosphere of a learned society, or place of learning. Well, you cannot help breathing and you cannot help growing; those processes will take care of themselves. The question for you from day to day is how to learn to work to advantage and college is the place and now is the time to win mental power. And, lastly, live to-day and every day like a man of honor.

What Friendship Means.

Ella Wheeler Wilcox says of friendship:

"Friendship is a word often and lightly used, and few of us realize just what is meant by the term, 'a loyal friend.' To stand by a friend 'through good and ill' is supposed to be one of the requisite qualities of loyal friendship. Yet the man who stands by his friend to the extent of justifying his evil deeds is not his friend, but his worst enemy. You may attend your friend through his trial before judge and jury, and use all the influence you possess to save him from punishment of the law, believing that he will not repeat his error, but if you justify his conduct and uphold him in a defiance of law and order, that is not friendship.

"Only when you inspire your friend to live up to the best within himself are you the real friend.

"'I would stand by you under all conditions' is not so noble a sentiment as to say: 'I would always love you under all conditions, but I could not stand by you when I knew you were doing what was unworthy of you.'

"Friendship takes us to the brink with a reckless friend, but it is only weakness and folly which take us over the brink. We serve no purpose, divine or human, by such an act. It is better that the friend repents and wants to try again, than that we should go down in the dark waters with him.

"Friendship demands that we should treat our friend's friend with courtesy and kindness, but it does not make it always possible to enjoy his society. It does not even save us from the possibility of being inexpressibly bored by the very association which may be delightful to our friend. On the other hand, the uncongenial acquaintance of our friend may prove a charming companion to us in many ways. Because our friend does not enjoy him is no cause why we should drop him from our list. Tyranny de-

mands such proofs of obedience: friendship never.

"The man who has been guilty of absolute cruelty, disloyalty or meanness toward our friend can never sit at our board or share our hospitality, no matter how charming be his demeanor to us, if we would be worthy the name of absolute friend. We are not called upon to cater to our friend's dislikes, but we are called upon to feel his injuries.

"Friendship does not mean that we must see no flaws or mention no faults. It does not mean that we should praise whatever our friend may do, good, bad or indifferent. It calls for careful and kind criticism and analysis.

"Yet if his standards differ from your own and he holds to them and does not abandon them for yours, it is no evidence that he is not appreciative of your interest. For each soul must follow its own light, and not that lent by another, however unselfish and devoted that other may be.

"Friendship does not necessitate the same point of view on all subjects. It necessitates the same sense of honor, the same adherence to principle, but individual opinions, views and ideas add to the interests of friendship.

"Devoid of the sense element of love, jealousy is impossible, and if the dwarf twin of jealousy, envy, approaches, it must shrink and die under the clear light of a friend's gaze.

"Friendship does not mean bearing another's burden; it means giving a friend the courage and strength to bear his own cheerfully. It means helping him over the rough places, but it does not mean walking and carrying him."

Growth of Telephony.

Speaking about long distance telephony, C. J. H. Woodbury, an official of the American Telephone and Telegraph Company, said recently:

"The toll line service began with the line built from Boston to Lowell in 1879, and this revealed both the functional possibilities of the telephone and the great many technical difficulties which have been overcome, and in the space of twenty-five years the length of long distance telephone lines has increased from twenty-seven to 275,000 miles. But these lines are not to be considered as comprising all of the lines outside of any municipality, as they can be attached to lines about 4,000,000 miles in length and radiating at these points, reach to the desired subscriber.

"When a person uses a long distance telephone, a large amount of property is at their exclusive service—for instance, in speaking from Boston to Omaha, as one business firm does every morning, the value of the fraction of line and apparatus at their sole disposal is at the present price of copper over \$283,000, while it requires the service of nine operators at the switchboards at various points along the line."

Mr. Hesketh Reports on the Telegraph.

(Concluded from Page 79.)

[In our previous issue we printed a portion of the report of Mr. John Hesketh, electrical engineer to the Queensland postal telegraph service dealing with the telegraphs in the United States. In this issue we give his observations of the telegraphs in Europe. His statement will no doubt prove interesting to our readers.]

In regard to the telegraph in other countries, Mr. Hesketh says that in Stockholm, Sweden, the telegraph switchboard system of distributing is the only point in which this system differs notably from our own.

He says that "there are many points of technical interest in the German telegraph system, but they are not such as are to be recommended for adoption in Australia, excepting only the switchboard system, which is now adopted here in the larger offices, and possibly the system of A.B.C. printer for small receiving offices."

"In Vienna, Austria, again, the only point of special interest was the telegraph switchboard.

"This system of handling traffic, particularly suburban traffic, was first introduced in Brussels, where I saw it in operation. Here practically the whole of the traffic of the State is handled by means of the switching system. By this system the lines which are not constantly busy are not connected to a separate instrument where an operator would be required for one, two or three instruments, as the case might be, but are connected to a switchboard, and, by a special operator, are connected either to each other for business which can be transmitted direct from office to office, or to idle instruments for business which is to be delivered from or retransmitted by the switching office.

"By this means, economy of operating and greater speed of transmission are obtained.

"The system is one which, in my opinion, would be of advantage in Sydney and Melbourne, but possibly the conditions in Brisbane or Adelaide are not yet such as to justify its adoption there."

Of the British system, Mr. Hesketh says:

"By far the foremost telegraphic administration in the world is that of the General Post Office, Great Britain. Here a special staff of highly-trained officers is maintained. The special duty of these officers is to inquire into new systems, and to develop new methods. By the courtesy of the engineer-in-chief, Mr. John Gavey, the whole of the experience of this huge department was placed at my disposal and passed in review.

"Summarized, the points of chief interest are the following:

"Ordinary Morse working presents no special features, except in so far as it is applied to local lines, when specially designed sounders are employed. These are of a type like the old acoustic dial, single needle, and possess advantages for local lines, where they can be employed in a man-

ner similar to that in which box sounders are used in America, and in the sub room, Melbourne.

"For such local lines the switchboard system of working is now standard in all the larger offices.

"Duplexes are used freely, but possess no special features. It is worthy, however, of note, that the double-current key, which the operators in Australia say seriously affects their operating, and causes premature breakdown, is used exclusively in the British service on double-current circuits, and without any complaint.

"Quadruplexes.—In England the quads work splendidly. Nowhere else have I seen such successful operating of the No. 2, or B side. The reason for this success is, in my opinion, to be found in the electrical constants of the circuits (they are much shorter than ours, and of heavier copper, usually), the great care given to the technical arrangements of the quads, the elimination of defective apparatus (generally found in the pole-changers), and the care exercised in balancing.

"By a special arrangement of the local on the No. 2 side, the uprighting sounder has been dispensed with at no loss in efficiency. This arrangement could, with advantage, be tried on some of our troublesome quads, and the effect seen. If the method as used in England is not itself useful with us, some modification of it can doubtless be applied with advantage.

"High-Speed Systems, etc.—In England, every promising new system is given a complete trial under the supervision of the inventor, if he desires. The systems, therefore, which have survived in Great Britain are those which have most worth. It is noteworthy that of the trials so far completed, the apparatus which has survived and demonstrated its usefulness to the fullest extent is the Wheatstone system.

"Now, although the Wheatstone system has survived, and is used practically to the exclusion of every other automatic system, it is remarkable that it is not now worked up to the highest possible speeds, nor is any effort made to increase speeds for normal working.

"The reason for this was given to me by Mr. Gavey. It appears that a special departmental committee was appointed to make recommendations as to certain traffic and technical matters in connection with the telegraph department. This committee advised that it was not advisable to work Wheatstone over 200 words a minute, for the reason that when this speed was exceeded the delay to business was simply transferred from the transmitting to the receiving end.

"It was a practical impossibility to so staff a Wheatstone line that the slip could be written up with no delay if the line were worked at maximum speeds. In other words, the experience of this great department is to the effect that to try after excessive speeds is a practical error, and that it is better to adopt such reasonable speeds as 200 words a minute rather than try after 600,

or more, by systems which depend upon the transcription of slip. The same argument does not apply to direct printing systems. This decision is the more remarkable, seeing that speeds as high as 600 words a minute have been attained by means of the Wheatstone system, and are now practically abandoned, although within easy reach on open aerial lines."

Charles Shirley Becomes Superintendent.

Mr. Charles Shirley, who has just been advanced from the managership of the operating room to be superintendent of the main office, as well as the city branch offices, has earned his promotion by hard painstaking work in the interests of the company he has served so long and faithfully.

Mr. Shirley was born in London, England, on November 4, 1858. At fourteen years of age he



CHARLES SHIRLEY.

The New Superintendent of the Postal Telegraph-Cable Company, New York.

became an operator on the Great Western Railway in England, holding several positions on that system until 1870, when he came to the United States. In May, 1880, he secured employment as an operator in the service of the American Union Telegraph Company in New York. When the American Union Telegraph Company wound up its affairs, he entered the service of the Continental Company, where he remained about eighteen months, then he resigned to accept a more lucrative position with the American Rapid Telegraph Company. Five years later the Bankers and Merchants Telegraph Company, having formed and secured the American Rapid plant as part of its system, Mr. Shirley was appointed night chief operator in the New York main office of that company. This position he held until 1887, when

he was made night manager of the Postal Telegraph-Cable Company's main office, at 187 Broadway. In March, 1889, he was appointed acting manager of the same office, and in June of the same year he received the appointment of assistant manager, and in June, 1894, he was made manager.

In the various positions which he has held since he began his telegraphic career, he has given the utmost satisfaction.

Charles E. Bagley Promoted to Be Assistant Superintendent.

Mr. Charles E. Bagley, who has just been appointed assistant superintendent of the Postal Telegraph-Cable Company, with headquarters at New York, has for the past three years been manager of the Philadelphia office of the same company. Mr. Bagley is a native of Boston, Mass., where he was born on January 7, 1866. His entry into the telegraph service was in 1881, in his native city, where his abilities were quickly recognized, and he rapidly passed through the several grades of positions, including the managership of all the Boston offices, until he finally reached the position of assistant superintendent, to which position he was appointed in 1898. This



CHARLES E. BAGLEY.

The Newly Appointed Assistant Superintendent of the Postal Telegraph-Cable Company, New York.

place he resigned a few years since to engage in outside business. This venture proving unsatisfactory to him, Mr. Bagley returned to the service, entering the employ of the company at Philadelphia, Pa., where he was soon promoted to be manager of the company's affairs in that city. His present promotion is further proof of the excellent ability and sterling worth of the man.

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of TELEGRAPH AGE, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

ST. LOUIS, WESTERN UNION.

Mr. Harry Nagel was the fortunate winner of a diamond stud recently raffled for.

Mr. Geo. W. Flowers, who was stricken with paralysis now appears to be in a fair way to recovery. He is expected back to the key within a few weeks.

Miss Stacia Owens has left the main office to accept a position at the Union Station branch.

Mr. T. W. Simpson, formerly operator at the main office here, has been appointed manager at Muskogee, I. T., succeeding Thos. McLaughlin.

Mr. Geo. Miller, who worked the cotton wire here, was recently appointed manager of the time service department, vice Robt. Tessmer.

PEORIA, ILL., WESTERN UNION.

The following is the personnel of this office at the present time: William Howard, manager; L. O'Loughlin, chief clerk; clerks—Miss Victoria Wilde, Casper Salm, R. W. Trotter, A. G. Miller, while F. L. Michael is in charge nights.

The operating department is presided over by E. J. Mahoney, chief operator; T. J. McGrath and J. R. Taliaferro, on the Chicago quad, while F. E. Lowe, B. E. Brill, Homer Barlow and Miss Sarah Hughes attend to the other wires. Mrs. P. S. Lytle furnishes us with the weather reports from the new United States Weather reports, and assists at the main office while operators are called from labor to refreshment.

Branch offices are taken care of by F. C. Sheahan, at Main Street; W. L. Miller at the Stock Yards, and Miss M. R. Mahoney at the Union Depot.

NEW YORK.**POSTAL TELEGRAPH-CABLE COMPANY.****EXECUTIVE OFFICES.**

Mr. G. W. Blanchard, superintendent of the New York City offices and the marine service, has resigned to engage in the real estate business.

Mr. Charles Shirley, manager of the New York main office, has been promoted to be superintendent of the city offices, including the main office, vice G. W. Blanchard.

Mr. F. F. Norton, assistant manager, has been promoted to be manager of the main office, vice Charles Shirley, advanced to the superintendency.

The marine service, which has previously been under the jurisdiction of Mr. G. W. Blanchard, has been transferred to the district presided over by George H. Usher, superintendent.

Mr. Charles E. Bagley, manager of the Philadelphia office, has been advanced to the position of assistant superintendent of the New York main and city offices, which is a new position.

Mr. J. A. McNichol, night manager, has been appointed manager of the Philadelphia, Pa., office of the company, vice Charles E. Bagley, promoted.

Mr. H. N. Bauer, formerly connected with the district electrician's office, at New York, is now with the Southwestern Telephone and Telegraph Company as wire chief at Dallas, Tex.

Mr. Francis W. Jones, electrical engineer of the company, owing to a severe case of bronchitis, has found it necessary to take a southern trip.

Mr. Charles C. Adams, fourth vice-president of the company, accompanied by his wife, left for California on February 23 on business connected with the service.

Mr. Thomas E. Fleming, special agent of the company, is again at his desk after an absence of some weeks on a business trip connected with the service.

IN THE OPERATING DEPARTMENT.

W. Wolff, recently of the Cotton Exchange office, has been added to the night force.

W. T. Budds and H. Dobbs have been added to the all-night force.

T. P. Brooks is located at the 954 Broadway office for an indefinite period during the heavy file of business there.

P. J. Glynn is located at the 1947 Broadway office for a short period.

T. P. Smith, assistant quadruplex chief, has gone to Baltimore to study the Rowland telegraph system.

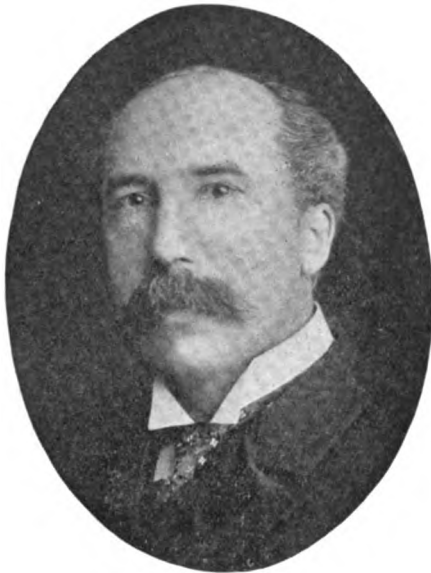
J. L. Barnum and L. G. Thornton have been added to the night force.

Mr. Charles Shirley, manager of this office, was recently heard to pay a glowing tribute to the worth of the late William B. Clum, who died at the age of seventy-nine, on January 29. He said: "I must admit that Mr. Clum was as good an operator the last day he worked in this office as he was twenty-five years ago, and that means that he could care for our most difficult wires on which there were innumerable small offices cut in."

F. F. Norton Becomes Manager of the New York Office.

Mr. F. F. Norton, who has just been promoted to the position of manager of the main office to succeed Mr. Charles Shirley, is a native of England, having been born at Barton, Oxfordshire, on July 23, 1858. His promotion from the assistant managership to direct charge of the largest office

in the Postal service has been earned by his fairness in the treatment of all interests under his charge. He is genial, courteous and exceedingly companionable, yet very firm in business transactions, which are naturally the essentials that go to make up a competent manager. Mr. Norton learned telegraphy at St. Thomas, Ontario, in 1873, and entered the service of the Montreal Telegraph Company, remaining with that company till 1880 as chief operator and manager, then resigning to go with the Dominion Telegraph Company at London, Ontario, as operator. In 1881 he came to New York as operator for the Western Union Telegraph Company. In January, 1882, he cast his fortunes with the Baltimore and Ohio Telegraph Company as operator and manager of their first main office at 63 Broadway, and afterward traffic chief of the main office at 415 Broadway. His prompt and systematic manner of handling his men and business, won him much



F. F. NORTON.

The New Manager. Main Office, Postal Telegraph-Cable Company, New York.

favor, both with the company and those in his charge. Upon the absorption of the Baltimore and Ohio by the Western Union Telegraph Company, he retired from the ranks, but in 1888 he again entered the service as operator, and in May, 1889, was appointed as all-night chief for the Postal Telegraph Company, which post he filled until 1891-92, when he was made city chief. He was further advanced until he was made assistant manager of the office, which position he now relinquishes to go higher.

WESTERN UNION TELEGRAPH COMPANY EXECUTIVE OFFICES.

Among the recent visitors to the executive offices were Manager W. A. Rudd, of the Boston office; Mr. Charles F. Annett, manager at New Haven, Conn.; Mr. C. R. Tilghman, of Cincinnati,

O., an attaché of the electrical engineer's department.

Mr. Charles M. Holmes, the executive messenger, on February 10, assisted by his numerous friends, celebrated his sixty-eighth birthday.

IN THE OPERATING DEPARTMENT.

Mr. W. H. Mayer, of this department, is quite an adept in photography. His work is of a very high class, and of late he has been employed to take pictures of the various properties of the Western Union Telegraph Company located in this city and also the various marine stations owned and operated by the company.

Miss Anna M. Keating and Mr. M. F. O'Neill, both of this office, were married in St. Peter's Church, in Barclay street, Sunday evening, February 18. A host of friends were present at the services, and the floral decorations, offerings of friends of the bride, were much admired. Mr. and Mrs. O'Neill were the recipients of many valuable presents. After the ceremony the couple started for Lakewood, N. J.

The nominations for the various offices in the New York Telegraphers' Aid Society for the ensuing year will close on March 8. The usual hustling of the friends of the candidates will, therefore, soon be in evidence.

The resignations include Messrs. S. Holland, F. P. Sheridan, W. Klitz and D. Grosso.

Mr. J. A. Kenna, an old time telegrapher of this office, was recently severely injured by a horse falling on him at his home, in Concord, N. H.

Mr. Edward F. Welsh, assistant general wire chief of the company, who is still very much alive and in evidence, should not be confounded with Edward F. Welsh, a New York telegraph operator, and at various times an employee in this office, who recently died.

Mr. M. J. Kenna has returned to the city from New Orleans, where he has been located during the winter.

Charles S. H. Small, a native of England, aged fifty-five years, night traffic chief of the southern division, died of oedema of the lungs, on February 20, at his home in Passaic, N. J. Mr. Small was at one time assistant superintendent of the Gold and Stock Telegraph Company and held other important positions in the service. He was the first secretary of the Gold and Stock Life Insurance Association, and held certificate of membership number three.

Three Chicago circuits have been equipped with the Barclay printing system, and a fourth circuit to the Lake City will soon be installed.

OTHER NEW YORK ITEMS.

Assessments No. 445 and 446 have been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of Charles S. Champlain at New York, N. Y.; Jeremiah D. Flynn at Pittsburg, Pa.; Edwin Reynolds at Brooklyn, N. Y.; Alfred J. Bailey at Brooklyn, N. Y.; Elijah L. Bugbee at Washington, D. C.; Ransom A. Davis at Cleveland, O.;

George S. Hoyt at Shannock, R. I.; Hiram C. Shorey at Newawkum, Wash.; Howard D. Huntsman at Langhorne, Pa.; Daniel A. Toland at Philadelphia.

The Commercial Telegraphers Union, Local 16, will hold their annual smoker and tournament at the Manhattan Lyceum, 66 East Fourth street, New York City, on April 20 next. The proceeds of this entertainment, for which the best professional talent has been secured, will be devoted to the sick benefit fund.

The sale of tickets has already exceeded the most sanguine expectations, and if Local 16 does not have a handsome surplus in its sick benefit fund at the conclusion of the forthcoming smoker it will not be the fault of its enthusiastic committee. C. P. McInerney, the local secretary, at Room 527, American Tract Building, 150 Nassau street, will be pleased to furnish tickets or any other information desired.

Mr. H. E. West, for twenty years identified with the Western Union Telegraph Company, is now cable engineer of the government cable steamer Cyrus W. Field, located in New York harbor.

The printed proceedings of the seventeenth annual meeting of the Magnetic Club of New York, which occurred on January 11, have been distributed among the members. The reports of the officers show the club to be in a most prosperous condition; \$117.14 being the amount on hand after all expenses had been paid.

Mr. Robert Tomes, for many years identified with the central cable office of the Western Union Telegraph Company at 20 Broad street, is now the eastern representative of a number of western papers, and is reported to be one of New York's leading newspaper correspondents.

The New Postal Office at Birmingham, Ala.

The new offices and operating room of the Postal Telegraph-Cable Company at 2004 and 2006 First avenue, Birmingham, Ala., are said to be the most complete in the south. More operators are employed here than in any other southern city.

The operating room, which is on the second floor, has seating space for one hundred and eight operators, and about seventy are employed in the office all the time. Over one hundred people are on the payroll. The room is lighted and ventilated by two skylights and fourteen windows.

The operating tables are of the latest pattern and are designed especially for typewriters only. Pen and ink have been entirely discarded, and all messages are taken on the typewriter.

Manager T. D. Jackson states that the Postal company's facilities in Birmingham are much larger than they are in any other city of the size of Birmingham in the country, and, in fact, that they are greater than the facilities of many cities that are much larger than Birmingham.

Postal Telegraph-Cable Co.'s New Office at Fitchburg, Mass.

The Postal Telegraph-Cable Company has recently moved its office at Fitchburg, Mass., from 128 Main street to the Park Building, 119 Main street. The new office is equipped with all the modern conveniences. It is as fine an office as the company has anywhere in New England, being large, well lighted and located in the business section of the city. The cables entering the office, and the new switchboard were installed by J. P. O'Donahue, district electrician, and J. F. Patterson, of Boston. The inside wiring was done by W. K. Pulsifer, station electrician, who has his headquarters at Fitchburg. Mr. Pulsifer has also devised many little conveniences for the operating room, one of them being an arrangement for the district and watchman's night signal system; an attachment showing a light on each register when a call comes in.



NEW POSTAL OFFICE, FITCHBURG, MASS.

The inside equipment of the office consists of a quartered oak quartette typewriter operating table, furnished with resonators of the latest design. The Carmody District Messenger and Night Watchman Signal Service is operated in connection with the Postal Telegraph-Cable Company, of both of which companies Mr. J. C. Carmody is manager.

A storage battery plant was installed some time ago to operate the district circuits.

The office force consists of J. C. Carmody, manager; Miss B. M. Atkins, assistant manager; Miss Margaret A. Hogan, stenographer and bookkeeper; Thomas B. Walsh, operator; John F. Enwright, night signal and telegraph operator, W. K. Pulsifer, station electrician.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

Retirement of J. W. Fisher, of Nashville.

Mr. Joseph W. Fisher, the veteran telegrapher of Nashville, Tenn., on February 12 retired from active connection with the Western Union Telegraph Company, closing an eventful career which practically comprehends the entire history of the Morse telegraph.

Entering the telegraph business June 30, 1850, Mr. Fisher retired February 12, 1906, after covering a period of active service of little less than fifty-six years, and with the exception of four years during the Civil War, his connection has been with the Nashville office.

Mr. Fisher was born in Nashville, September 26, 1833, within two squares of the present Western Union office. In his connection with the telegraph business he was in intimate association with Dr. Norvin Green, John Van Horn, George W. Trabue, Joseph B. Tree, James Compton and other prominent Southerners who were conspicuous in the development of the Morse system of telegraph.

Prof. Samuel F. B. Morse in demonstrating the accomplishments and advancement of the telegraph at the great Paris Exhibition in 1855, made request of Mr. Fisher, who was noted as a rapid operator, to make speed records for the exhibit. Mr. Fisher, under a five-minute speed test, sent two hundred and fifty words, fifty-five words being transmitted in the first minute. The competition in this contest was keen, but Mr. Fisher's speed far exceeded his competitors, and he was recorded as the fastest operator in the world. This record was remarkable inasmuch as with all the improvement in apparatus and construction of telegraph lines which has greatly increased the possible speed of a circuit, this record was not equaled until about five years ago.

General Mention.

On March 1 the Northern Telegraph Company of Maine will discontinue its business relations with the Western Union Telegraph Company and will interchange business with the Postal Telegraph-Cable Company instead. The Northern Telegraph Company's lines run along the road of the Bangor and Aroostook and Northern Maine seaport railroads. Mr. F. W. Cram, president of the railroad company, says that the relations of the company with the Western Union have always been harmonious, but that the contract with that company expires March 1, and it has been decided to make a change. The Western Union Telegraph Company will establish independent offices at the points reached by the railroad.

Mr. W. H. Stansell, manager of the Postal Telegraph-Cable Company at Charlottesville, Va., in a recent letter to this paper, says:

"I see no reason why an up-to-date telegraph operator or manager employed in any telegraph company should be without TELEGRAPH AGE. I have not been a reader of TELEGRAPH AGE very

many years, still I find it a splendid collateral in my course in telegraph engineering. I know of no other paper that keeps me so well informed as to what his fellow laborers are doing and what advances are being made in the telegraph field as your paper."

James S. Stone declares that by wireless telegraphy one can now send forty words a minute, or as many words as wire telegraphy, and that, contrary to Edison and Marconi, its greatest service will be on land rather than on sea, improvements having been made since their judgments were given that will upset all their calculations.

Rev. Joseph Murgas, of Wilkes-Barre, Pa., who has invented a system of aerial wireless telegraphy, announces that experiments in underground wireless telegraphy have reached a stage when he can promise soon to send a wireless underground message to Europe.

A citizen of South Carolina has brought suit against one of the telegraph companies, claiming \$1,500 damages for its failure to deliver a telegram in time to permit him to attend the funeral of his mother-in-law. The bill of complaint does not state whether the delay in the delivery of the message caused him sorrow or delight.

Mr. Andrew Carnegie has pensioned Mr. J. H. Larcomb, a well-known old time Washington, D. C., telegrapher, who for some years past has been an attache of the government pension bureau. Mr. Larcomb was at one time Mr. Carnegie's manager, and the good relations then established still prevail.

A. B. Leach and Company of New York have purchased \$500,000 Western Union collateral trust 5% bonds, maturing January 1, 1938. They are offering them to investors at a price to net the investor approximately 4½%.

The Canadian Pacific Railroad Telegraphs contemplate a further improvement and extension of their telegraph lines in the immediate future in British Columbia.

Deterioration in Storage Batteries.

Literature of no definite nature exists upon the deterioration of the secondary cell and its cause, says the Western Electrician. Certain impurities are injurious to the action of the lead-sulphuric acid cell, as is fully realized, but knowledge of the exact amount of each impurity admissible is indefinite and practically a matter of conjecture. A great deal of interest, therefore, attaches to a paper which was read recently by G. D. Aspinall Parr before the Leeds Local Section of the British Institution of Electrician Engineers. The paper is based upon a series of tests recently commenced by Mr. Parr, which throws considerable light upon this hitherto little-known subject.

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Some Valuable Telegraph Books.

All of the books described in the following list embody a choice number from which selections may advantageously be made, and furnishes an excellent catalogue for the consideration of telegraphers. Any book named will be sent upon receipt of price to any address, carrying charges prepaid. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

POCKET EDITION OF DIAGRAMS.

"Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students" is acknowledged on all sides to be the standard work of the telegraph. Speaking strictly within bounds, it is not too much to say that this volume presents the finest study of the complex subject of the telegraph ever attempted. There is no other book like it or even approaching it, in thoroughness, comprehensiveness, or in original detail of statement. The author, Willis H. Jones, is a practical telegrapher himself—an engineer in his profession of recognized ability, who knows exactly what other telegraphers want to know, and has the faculty of imparting that knowledge in a manner at once so clear, so simple, so bright, so entertaining, so free from needless technicalities, that his readers, even the least informed among them, readily understand his meaning. The helpful qualities of the work will be clearly manifest alike to the beginner, to the student, to the operator and to all telegraphers whether in the commercial or in the railroad service.

"Pocket Diagrams" does not deal in theory; it is packed full from cover to cover of the common sense of telegraphy, the side against which the ordinary every day operator runs up against, and respecting which he desires information of the kind that will aid, not mystify, him. The book contains 334 pages, and has 160 splendid diagrams. It has the unqualified endorsement of telegraphers everywhere.

Always a desirable purchase to the student in his profession, it is specially recommended at this time as a peculiarly appropriate gift for the holiday time among telegraph people.

The price of Pocket Edition of Diagrams, etc., is \$1.50.

PHILLIPS CODE.

The popularity of the Phillips Code, by Walter P. Phillips, was never more apparent than at the present time. Its acceptance by the telegraphic fraternity, as a standard work of the kind, dates from its first publication, and the constantly increasing demand for this unique and thoroughly tested method of shorthand arranged for telegraphic purposes, has necessitated from time to time the issuance of several editions. The present edition was carefully gone over under the supervision of Mr. A. P. Velie, an expert press and code operator, for many years identified with The Associated Press, New York, a few revisions made and a number of contractions added, until now this "staunch friend of the telegrapher" is strictly up-to-date in every particular. It has been declared that an essential qualification of a "first-class operator" was a thorough understanding of Phillips Code.

Many expert code operators have examined the revised edition of this code, and all unite in pronouncing it perfect. Mr. George W. Conkling, who has won the championship for sending code in many tournaments, says:

"I have examined thoroughly the additions contained in the latest edition of the Phillips Code and most heartily approve of them. Every operator who is familiar with the code should find no difficulty in mastering the new contractions, as they 'fit in' smoothly and I think the ground has been entirely covered."

The price of the book is \$1 per copy.

"Telegraphers of To-day," illustrating the personnel of the telegraphic profession with more than 900 biographical and historical sketches of leading members of the craft, is a unique and valuable work; it has become standard, being the only work of the kind extant. It contains 354 double column pages, 7 by 11 inches in size, has gilt edges and is bound in imitation Morocco—altogether a handsome volume.

Of this fine publication, becoming more and more valuable as time passes, we have but a few copies left. The original price was \$5. In order to readily dispose of these remaining volumes, and place them where they rightfully

belong, in the hands of every telegrapher who failed to secure a copy at the higher original price, we have cut the figure to \$1 a volume. On receipt of this amount the book will be sent to any address, express charges to be paid by the purchaser. At this low rate, a sum below the cost of binding the book, no telegrapher who desires to own a copy should fail to obtain one at this time, for this "bargain" price will probably never be repeated.

"The Quadruplex," by William Maver, Jr., and M. M. Davis, still holds its own as a work of authority in its treatment of its subject. A clear analysis of that system of telegraphy is afforded and telegraphers have constant need of the book. There are 128 pages in the volume and 63 illustrations; price, \$1.50.

The life of Prof. S. F. B. Morse, the standard work, authorized by the Morse family, and compiled from original papers and other authentic data in their sole possession. It is a clearly written biography, charmingly told by a trained newspaper man, a close personal friend, and presents the life of this great inventor of the telegraph in a broader, more intense, human and truthful attitude than ever before attempted or even possible; 775 pages, illustrated; sheepskin binding. The original price was \$6, which we have reduced to \$3, on receipt of which the book will be sent, express charges prepaid.

"The Telegraph in America," by the late James D. Reid, the "father of the telegraph," furnishes an authentic and complete history of the telegraph, tracing out its early start, its development, the organization of the various telegraph and cable companies, etc. The book is bound in full Russia, has 846 pages and is abundantly illustrated; a magnificent gift to any telegrapher. There are now but a few copies left of this great work and when these are gone the work will be out of print. The original price was \$7, but as the covers are a little shopworn the price has been reduced to \$5.

"Sketches Old and New," by Walter P. Phillips, is a handsomely bound volume of 164 pages of interesting and charmingly told telegraph stories; one of the very best works of the kind ever published and which will appeal strongly to every telegrapher; price, \$1.

"Lightning Flashes and Electric Dashes," a book made up of bright, ably written stories and sketches, telegraphic and electrical, that should find a place in the home of every telegrapher; 160 large double-column pages; profusely illustrated; price, \$1.50.

Old Timers' Souvenir—Miniature Legless Key. This is a beautiful emblem for operators; an attractive charm for the watch chain; a perfect duplicate in every detail of the celebrated miniature steel lever telegraph key that attracted so much attention and which was distributed as a souvenir at the banquet of the Old Time Telegraphers' and Historical Association at the Waldorf-Astoria, New York, August 31, 1905. It has a French lacquered body and nickel-plated lever. Price, by registered mail, prepaid, \$2.50.

"The Practical Management of Dynamometers and Motors," by F. B. Crocker and S. S. Wheeler, as indicated by its title, affords a clear understanding of the use, care and operation of these important adjuncts of the well equipped modern telegraph office. There is a constant demand for this book, for telegraphers find it an invaluable addition to their working library. There are 206 pages, and 99 illustrations; price, \$1.

"Electrical Instruments and Testing" is the title of a new volume by that industrious and excellent writer on such subjects, Norman H. Schneider. This book treats of the use of the voltmeter, ammeter, galvanometer, potentiometer, ohmmeter and the Wheatstone bridge. The explanations are practical, given with numerous worked out examples, fully illustrated with diagrams and drawings. The book is intended for practical, everyday use, and also as an introduction to the larger works on electrical testing. The apparatus described is modern and such as is generally employed. The volume is well printed on plate paper, contains 100 pages, including a fine index, and there are eleven chapters and 105 illustrations. The price is \$1; bound in cloth.

Important Subjects Treated in Back Numbers.

TELEGRAPH AGE has published the best articles on telegraphic subjects that have ever appeared in print. Herewith are enumerated a few of the most important subjects treated, together with the date of the papers containing the same. Copies of these back numbers may be had at twenty-five cents apiece upon application. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

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On February 24 over one hundred members and guests of the Magnetic Club of Philadelphia participated in the most enjoyable meeting the club has ever held. In the absence of the president, Mr. John C. Sager, who, it was regretted to hear, was sick, Mr. F. W. Griffin, first vice-president, presided. After an address of welcome he introduced Mr. S. S. Garwood, as toast-master, who, in his usual good style, took charge of affairs. After the disposal of the many good things he introduced Mr. Charles Selden, of Baltimore, our most recent member, who received a hearty cheer and delivered one of those addresses which have made him famous as an after-dinner speaker. He was followed by Secretary, C. B. Wood, who referred to the growth and success of the club, paying a well-deserved tribute to its founder, Mr. A. S. Weir, who not only received a loud cheer, but was compelled to take the floor. In response he delivered a very entertaining speech. Mr. Washington Devereux in his address spoke interestingly upon the telephone, and predicted that in twenty years the telephone would be so improved that we shall see the person to whom we are talking.

The progress of electrical railways was the instructive theme chosen by Mr. F. H. Lincoln. Among those present were: C. E. Bagley, E. C. Boileau, E. Burke, W. S. Burleigh, J. N. Donaldson, S. S. Garwood, F. W. Griffin, H. W. Hetzel, V. G. Hudgins, S. C. Ingalls, W. Koons, A. H. Lang, L. Lemon, F. E. Maize, R. C. Murray, Jr., J. A. McNichol, R. C. Mcreddy, J. A. Moran, C. E. Murphy, H. McAleer, G. Potteiger, C. Selden, A. S. Weir, C. B. Wood, J. Wintrup, A. C. Wallace, H. Williams, J. H. Wilson.

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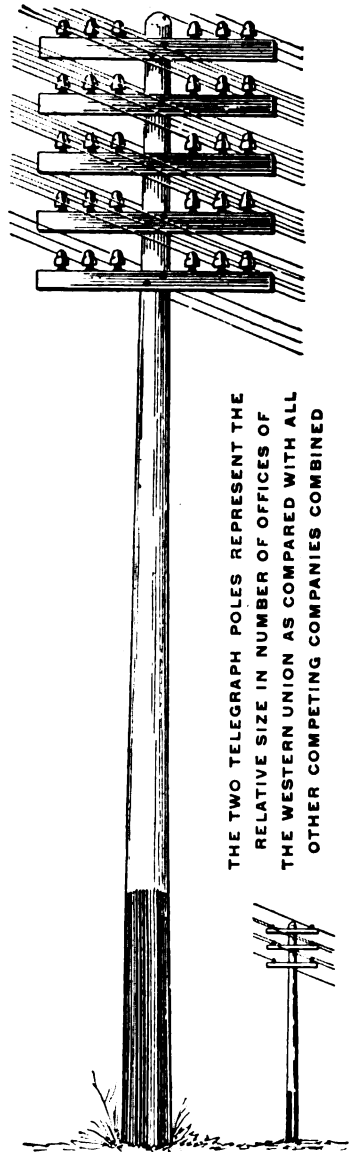
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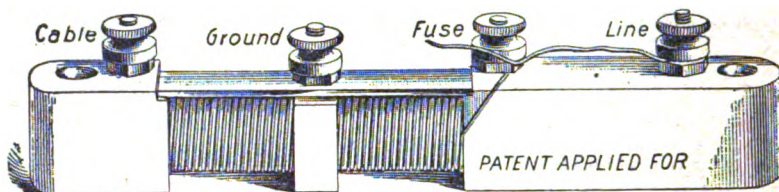
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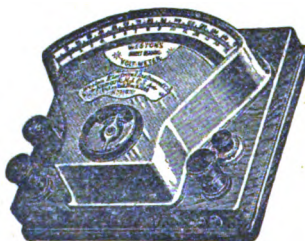
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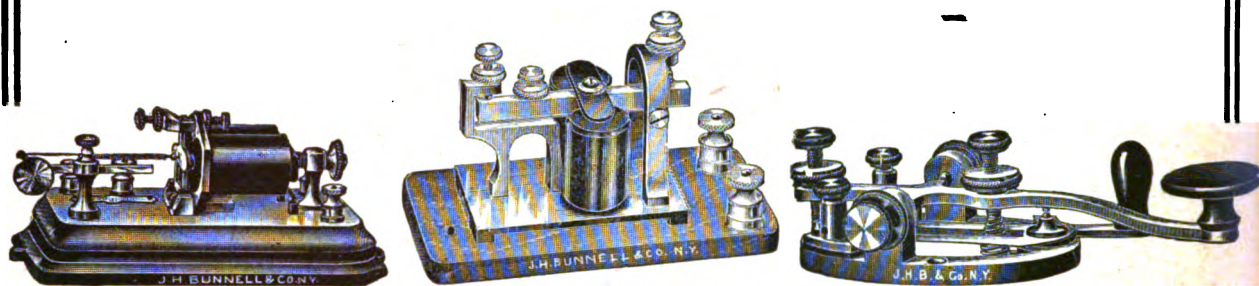
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No. 6

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SOME POINTS ON ELECTRICITY.

The Storage Battery.

Part I.

BY WILLIS H. JONES.

The storage battery, judging by the number of letters received by this journal requesting information concerning the subject, seems to be an ever-interesting topic. The greater number of such letters are, of course, from laymen, while the remainder consist principally of inquiries regarding the merits of certain methods of arrangement, or the writers seek advice as to the advisability of utilizing such batteries in preference to the dynamo or other types under conditions stated.

It would obviously be impossible to cover the field of inquiry fully within the usual space allotted to articles of this kind. A general description of the storage battery, however, showing its inherent properties, should enable almost any one possessing ordinary intelligence to decide for himself, when in doubt, whether the employment of such a battery would be preferable for the purpose for which he desires to use it.

In the first place, it should be understood what a storage battery really is. The word storage, in connection with the current capacity of a cell,

seems to mislead many into believing that the cell is a reservoir of electricity in the form of a current which is stored away for future use, as hay or any other commodity might be placed in a barn till needed. The fact is there is no electric current whatever stored away, but there is an electromotive force of two volts so held in reserve, if we may be allowed to apply the expression here, on the plates of the cell by the action of a current of electricity from another source which must first be passed through the liquid in the storage cell in order to develop the said two volts pressure. The current, therefore, which the storage battery provides is not taken from its warehouse, so to speak, but is created in the external circuit it feeds during the cell's activity by means of its electromotive force in exactly the same manner as if it was a dynamo machine, the quantity, of course, being regulated by Ohm's law $E \div R = C$.

The rating capacity of the cell in ampere-hours also tends to suggest the idea that current itself is stored away in quantities as indicated by the markings. What should be understood by the capacity mark, however, is that the plates of the storage cell have been constructed of a size, and charged with a sufficient volume of current from an outside source to insure the maintenance of the two volts pressure for a period of time long enough to create and pay out to external circuits a quantity of current equal to the marked capacity of the cell, as indicated in ampere-hours, before becoming exhausted.

The storage cell possesses practically no internal resistance, as compared with that of blue-stone batteries. In this respect it is also like a dynamo constructed for large quantities of current. It has the advantage of the latter, however, inasmuch that it is able to furnish a steadier current under nearly all conditions than the dynamo, because of the absence of brushes and other moving parts required in the operation of the mechanical generator.

Sudden demands for great alterations in the volume of current required does not seem to affect the value of the electromotive force of the storage battery to any appreciable extent. A like change in current volume flowing through the coils of a dynamo, however, tends to temporarily disturb the momentum of the rotating armature owing to the reaction of the current therein, as well as to cause momentary sparking at the brushes. The development of either of these conditions naturally affects the value of the elec-

tromotive force generated. Of course, in the larger and better classes of machines these effects are practically harmless, but still sufficiently pronounced to make it necessary to assign dynamo currents to second place in a competitive test for constancy. The storage battery, therefore, may be safely substituted for the constant pressure dynamo method, with equal and often better results, so far as the respective merits and outputs are concerned, other conditions being equal. Of course, the matter of room space and charging facilities must be taken into consideration, but that is a mere matter of detail.

We have purposely enlarged on the comparative efficiencies of the storage and the dynamo methods, as information on that point seems to be sought quite generally by our numerous correspondents. Like other valuable devices, the storage battery must be not only properly handled for best results, but should be selected as to size or capacity in an intelligent manner, otherwise its output will be greatly diminished. This hint refers particularly to the rate of charging and discharging the cell. It is too generally accepted as a fact that a cell marked, say 100 ampere-hours, will deliver practically that total amount at all times before becoming exhausted. Such is not true, however, for that all depends upon the rate per hour at which the current is drawn on, and has a direct bearing on the size of the cell itself. Under certain conditions a so-called one hundred ampere-hour cell will yield as much as one hundred and twenty ampere-hours in all, after having been fully charged, while under different conditions sometimes less than eighty-five ampere-hours are obtained therefrom. The same rule applies to the charging of storage cells.

In the next installment of this article we shall endeavor to describe some approved methods of charging these batteries and show how the cells may be made to work full time and to the best advantage.

(To be continued).

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, Inc., June 1 to July 16, Inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, Inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, Inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power from the Clouds, July 16; Concerning Condensers and Retardator Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16; The Dynamo—Series, Shunt and Compound Wound, Feb. 1-16, March 1.]

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

Business Notices.

On another page will be found the advertisement of the Central Typewriter Company, 280 La Salle street, Chicago. This concern is the successor of the Telegraphers' Typewriter Company of that city, and Mr. O. T. Anderson, well known in telegraph circles in the Lake City, still remains at its head. Under his personal supervision it is fair to assume the re-organized company will continue to prosper. A branch office of the company has been opened at 22 East Mitchell street, Atlanta, Ga., under the management of W. L. Gilbert.

Although it is a well-known fact that the J. H. Bunnell Company, 20 Park place, New York, have for years maintained a record for a high standard of excellence in the class of telegraph and other goods designed for electrical purposes, manufactured by them, too much emphasis cannot be laid on this fact. It is always a source of satisfaction and pleasure to place an order with the assurance that the finished product will measure up fully to design and all requirements. This is a fine reputation to acquire, and in the instance of the Bunnell company is the outgrowth of years of conscientious endeavor. Particularly in regard to the manufacture of telegraph apparatus in which this house has long been engaged, it may be said that it has no superior. This is due largely to the fact that the controlling heads ever since its establishment have been telegraphers, hence the practical knowledge that has been brought to bear and given direction to this specialty.

The Remington Typewriter Company has issued an exceedingly neat and carefully prepared little brochure especially addressed to telegraph operators, bearing on its front cover the legend, "Do you use 'a mill'?" Who other than a telegraph operator would understand the word "mill" as applied to a typewriter? The little volume points out the advantages accruing to the operator in becoming proficient in the use of the machine, not only as a means of making his position easier, but also as leading to promotion, and abounds in a lot of interesting, practical and common sense discussion of the subject. Its author evidently is treading on familiar ground, for he handles his topic in a way that shows he "knows his business." Operators will be interested in the little work, for it is well worth having, and as a request for it simply is all that is needed to secure a copy, they should not fail to make their wants known. Address the Remington Typewriter Company, 325-327 Broadway, New York.

TELEGRAPH AGE will furnish operators with just the kind of practical information they require.

Personal Mention.

Mr. S. Symons, chief superintendent of the Central Telegraph Office, Johannesburg, South Africa, was in New York in the early part of this month and inspected the telegraphs in this city before sailing for England on his way home.

Mr. Thomas A. Edison and family have gone to their Florida plantation, where they are spending the entire month of March, returning early in April. This holiday is one that Mr. Edison has anticipated with much zest after the hard work of the winter.

Mr. Dennis J. Hern, formerly general manager of the Mutual District Messenger Company, of Boston, has resigned his position on the Boston Board of Health and has been nominated superintendent of the Lamp Department of Boston by Mayor Fitzgerald.

Mr. B. M. Downs, general manager of the Brookfield Glass Insulator Company, of New York, accompanied by his wife, has returned from a business and pleasure trip to California. While on the Pacific Coast Mr. Downs took occasion to pay his respects to numerous telegraph officials.

Obituary.

William J. Byrnes, aged fifty-two years, a prominent and brilliant telegraph operator, died at his home in Pittsburg, Pa., on February 25.

James H. Ward, a well-known telegrapher, a native of Nova Scotia, for many years chief operator of The Associated Press at Dallas, Tex., and for the last three years connected with the Chicago office of that association, died of heart disease in Chicago on March 2.

Joseph T. Ramsey, aged forty-two years, manager of the Chamber of Commerce branch office of the Postal Telegraph-Cable Company, Milwaukee, Wis., died in that city after a brief illness, on February 28. He was a brother of Henry J. Ramsey, night manager of the Postal at Milwaukee.

Albert Crary, aged 58, an old-time Western Union telegraph operator, of Cincinnati, O., who was well known to operators throughout the country, died at his home in Dayton, Ky., March 3. He suffered from rheumatism and pneumonia. Crary was for many years operator at the Chamber of Commerce, Cincinnati. This position he gave up a few years ago. His fifty-eighth birthday occurred the day before his death.

Wireless Telegraphy.

A patent, No. 813,975, for wireless telegraphy, has been issued to J. F. King, Washington, D.C.

It is reported that Robert Anderson, a newsboy of Venice, Cal., has discovered a process for tempering copper to the hardness of steel. It is said that he has an ax and several knives of fine quality made from copper.

The Savannah Steamship Company is installing the American De Forest wireless system on all of the steamers of their fleet.

The government of Cuba has sanctioned the expenditure of \$20,000 on construction and repairing telegraph lines and wireless telegraph installations.

The Postmaster-General, in the English House of Commons, has brought in a bill to continue the Wireless Telegraphy Act of 1904, entered into with the Marconi Wireless Telegraph Company.

David J. Hill, United States minister at The Hague, reports that the Netherlands Government has issued an order respecting the exchange of wireless messages, and fixing a provisional tariff in regard thereto.

Once more it is announced that it will not be long before there will be a wireless telegraphic service between this country and England. It is stated that the preliminary difficulties have been overcome, and Mr. Marconi hopes that the service will be in operation by fall.

The United States circuit court at New York has awarded to William Marconi priority as the originator of wireless telegraphy as claimed in his suit against the De Forest company. The judges say Marconi was the first to describe and the first to achieve the transmission of definite intelligent signals by means of the Hertzian waves.

Wireless telegraph tests are to be made for the next thirty days by the officers in charge of the various stations established by the Navy Department, to determine, if possible, the cause of the many failures to receive and send messages at sunrise and sunset. Repeated tests have shown this to be the case, and it is said that the navy operators were the first to make the discovery of this strange and important phenomenon.

The ingenuity of three Newport, R. I., school-boys in "tapping" the air recently for wireless messages transmitted by the Government and at the same time sending messages to passing ships equipped for such a purpose has interested Commander Albert Gleaves, of the United States Naval Torpedo Station at that point. He began an investigation to learn who it was that was both sending and receiving the wireless messages, with the result that he found a well-equipped plant conducted by boys, the eldest of whom is but seventeen years of age.

Jefferson M. Levy, of New York, who has just arrived in London, bought property in New York City by wireless from his cabin on the steamer Kaiser Wilhelm der Grosse in midocean. Mr. Levy had the Maiden Lane property submitted to him by a broker as he was sailing. He thought well of it, particularly as he already owned the adjoining buildings, but there was not time enough to arrange the terms of the deal before

the next morning. Negotiations with Mr. Levy were kept up, however, through the Marconi station at Nantucket, and later through that at Sable Island. The last exchange of messages was effected in midocean through another liner, between the Kaiser and the shore, until all the details of the transaction had been arranged.

As evidence of the progress being made in connection with the adoption and application of wireless telegraph installations to the class of communication to which this system has already become or is becoming adapted, a foreign exchange received particulars of the installations now supplied by the Gesellschaft für Drahtlose Telegraphic of Berlin. This list comprises a total of 518 stations, made up as follows: Germany, 169; Russia, 112; United States, 65; Austria Hungary and Sweden, 24 each; Holland, 23; Denmark, 14; Norway, 12; Spain and Portugal together, 10; Argentina, Brazil, China, 9 each; Netherlands India, 7; Switzerland, 6; Mexico, 4; Bosnia, Cuba, England, Finland, France, India, Peru, Siam, Tonkin and Turkey, 2 each; Uruguay, 1.

Mr. Marconi tells a weird story in connection with his system of wireless telegraphy. There is a station off Cape Clear, the utmost point of land to the westward of the British Isles. Here are received final messages dispatched by ships outward bound and the first hail of vessels that have crossed the Atlantic steering east. To this lonely station there comes shortly after the stroke of midnight, a mysterious message, untranslatable, incomprehensible. But always at a certain point, varying night by night, there is delivered one word that is ever the same. It is recognizable only by its unvarying sign. It belongs to no language known to this planet. For two years the mysterious communication has never missed arriving invariably between midnight and the stroke of one in the morning. Mr. Marconi's explanation of the phenomenon is as striking as the incident itself. He believes it is Mars endeavoring to communicate with its sister planet. Why the message should exclusively reach this particular spot on earth, what Mars wants to say, and wherefore the unrequited patience of nightly repeating the communication through two years, are matters to be guessed at. That the mysterious message arrives at the times and in the manner indicated is a fact for which Mr. Marconi vouches.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. Daniel O'Hara has been appointed manager at Goshen, N. Y.

Mr. C. Mantz Doll has been appointed manager at Frederick, Md., vice William M. Crimmins, resigned.

The following changes have occurred in the

service of the Postal Telegraph-Cable Company:

Miss Jennie B. Wright, has been appointed manager at Lockport, N. Y., vice W. C. Casey, transferred to the Buffalo office.

Mr. Wyatt E. Berry, of Portsmouth, N. H., has been appointed manager of the office at that place, vice George E. Morrill, resigned.

Mr. Daniel Carter, for many years with the Postal Telegraph-Cable Company at Boston, Mass., and for a short period manager of that company's interests at Springfield, Mass., is now with the American Telephone and Telegraph Company, at Boston. He is succeeded at Springfield by C. H. Goddu.

General Mention.

The mileage of overhead and underground telegraph wire, etc., in England is as follows: Aerial, 3,433,911; underground, 225,748, a total of 3,659,659.

John Barrymore, the actor, is to accompany William Collier on his Australian tour, and will take the part of the telegraph operator in the play of "The Dictator."

Mr. John M. Bell, manager of the Postal Telegraph-Cable Company, of Tacoma, Wash., was recently tendered the mayoralty nomination of that city by a large delegation of his fellow-citizens.

The Typewriting Telegraph Company has been organized in New York with a capital of \$250,000. The directors are W. W. Crehore, of Elizabeth, N. J.; W. C. Sherwood, of Jersey City, N. J., and A. F. Garbe of New York.

Hon. George Hall of Ogdensburg, N. Y., an old-time telegrapher, has recently added to his many gifts to public institutions of that city, a further donation of \$2,500 for the building of a wing to the city hospital.

Enormous sums of money are frequently expended by various governments to rectify errors, often apparently trivial, in government printing. The United States, some years ago, destroyed 4,000,000 telegraph forms owing to the misspelling of a single word.

Lamprecht Brothers & Co., brokers, of Cleveland, O., announce the appointment of F. E. Rudenauer, at present chief of their telegraph service, as floor manager of their stock room. E. C. Monroe has been appointed chief operator and F. W. Agnsio has been added to the staff.

Germany's underground telegraph system dates from 1870. France followed suit, in 1879, as the result of a great storm that isolated Paris in 1875. Up to date her system has cost \$36,000,000, but is believed to have more than paid for itself. Lines constructed in 1880 are still in excellent condition.

Mr. W. O. Coffe, the inventor of the Mecograph, is employed as a telegraph operator by

the Publishers' Press at Cleveland, O. Mr. Coffe has assigned his patent to the Mecograph Company of Cleveland, O. Mr. Coffe filed his patent application on January 11, 1904, and the patent was awarded on February 13, 1906.

Gilbert McDonald, twenty-three years old, a railroad telegraph operator at Carmi, Ill., is totally blind, having lost his eyesight by fever when two years of age. When fifteen years old he began the study of telegraphy, an art he soon acquired. He now is said to be expert as an operator as well as in the use of the typewriter.

Recharging dry batteries may be accomplished, it is said, by pouring about a gill of dilute sulphuric acid (three parts water, one part acid) through two small holes bored in the top of the battery, the solution percolating down through the interior. The holes are then plugged up with common soap and the battery allowed to stand about twelve hours before using.

Mr. John G. Allen, of Raleigh, N. C., in a recent letter renewing his subscription writes: "In 1894 your Lynchburg, Va., agent, Mr. C. J. App, told me that he had sent in my subscription to TELEGRAPH AGE and wished me to remit to him to cover the same. I complied with his request and have been renewing ever since and have never regretted Mr. App's action."

Mr. Thomas T. Cusack, one of the expert telegraph operators of the fire alarm telegraph branch of the New York Fire Department, is an old-time newspaper man. He was employed on the New York Press not more than a decade ago. He was with one of the big press associations prior to that. His newspaper experience has proven of great value to him since he became a member of the staff of telegraph operators at fire headquarters.

The Cable.

The annual meeting of the directors of the Commercial Cable company took place in New York on March 5. The present officers were all re-elected.

Francis A. Taylor, formerly electrical engineer of the Eastern Extension Company, London, England, who was retired on pension some time ago, committed suicide by shooting himself on January 20, at Liverpool.

Secretary Shaw submitted to Congress March 8 an estimate of \$927,000 for the construction of a cable from Key West, Fla., to Guanatamo, Cuba, and thence to the Panama Canal zone. The estimate was made by General Allen, chief signal officer of the army, who prepared it at the request of Secretary Taft.

Cables remaining interrupted March 12 were those of Port Arthur-Chefoo, interrupted March 1904; Cadiz-Teneriffe, interrupted July 20, 1905; St. Jacques-Haiphong, interrupted February 14, 1906; Tangier-Cadiz, interrupted February 18,

1906; Jamaica-Colon, interrupted January 9, 1905; Martinique-Port Plata, interrupted October 30, 1905; Cayenne-Pinheiro, interrupted August 13, 1902; Curacao-Venezuela interrupted January 12, 1906; St. Lucia-St. Vincent and St. Vincent-Grenada interrupted, cutting off St. Vincent and Barbados, February 16, 1906.

With the approval of the Secretary of War. Congressman W. C. Lovering of Massachusetts has introduced a joint resolution authorizing the Secretary in his discretion to sell or lease the whole or any part of the telegraph and cable system of the United States in Alaska and to pay the proceeds into the treasury.

The Electrical Review, of London England, in its issue of February 23, prints a lengthy article on the wonderful progress made by the Germans in the manufacture of submarine cables, embracing besides the making of the cables, the building of the cable steamers and the laying of these cables in all parts of the world.

Mr. Charles Bright, F. R. S. E., gave a lecture at the Royal Military School, Chatham, England, February 9, on submarine telegraphy. In the course of his lecture, fully illustrated by lantern slides, remarks the Electrical Review, of London, Mr. Bright described the methods of transmitting electrical signals through cables, and mentioned that nowadays the speed of working was only limited by the type of cable in accordance with traffic requirements, thus showing that wireless telegraphy for commercial purposes had a considerable task ahead before it could compete successfully with cables.

The Bureau International des Administrations Télégraphiques has just issued its report for the year 1905. The countries adhering to the Telegraph Convention are as follows: Germany, Argentina, Australia, Austria, Belgium, Bosnia-Herzegovina, Brazil, Bulgaria, Cape of Good Hope, Ceylon, Portuguese Colonies, Crete, Denmark, Egypt, Spain, France, Algiers, Great Britain, Greece, Hungary, British India, Dutch-India, French Indo-China, Italy, Japan, Luxemburg, Madagascar, Montenegro, Natal, Norway, New Caledonia, New Zealand, Orange River Colony, Holland, Persia, Portugal, Roumania, Russia, Senegal, Servia, Siam, Sweden, Switzerland, Transvaal, Tunis, Turkey and Uruguay. The telegraph and cable companies are divided into three groups. Under the head of adherents are the Black Sea, Commercial, Deutsch-Atlantische, Eastern-Europe, French, German-Dutch, the Rio de la Plata, Telegraph and Telephone, Direct Spanish, Direct West India, Eastern, Eastern Extension, Great Northern, Halifax and Bermudas, Indo-European, South American, Spanish National, West African, West Indian and Panama, and Western Telegraph companies. The second group are constituted by those which, though not official adherents, generally conform with the service regulations, and the following

names appear here: African Direct, Amazon, American Telegraph and Cable (Western Union Company), Anglo-American, Central and South American, Commercial Pacific, Direct United States, Eastern and South African, Europe and Azores, Pacific and European, and West Coast of America Telegraph companies. The third group is composed of the British North Borneo, Cuba Submarine, India-Rubber, Gutta-Percha and Telegraph Works, Mexican, River Plate, and United States and Hayti Telegraph and Cable companies. These companies only correspond with the Bureau International through one or other of the companies named.

The Railroad.

The American Railway Association will meet at Chicago on April 25.

The next annual meeting of the Association of Railway Telegraph Superintendents will be held at Denver, Colo., on June 20. Mr. P. W. Drew, of the Wisconsin Central Railway, Milwaukee, is the secretary of the association.

The periodical dinner of the Railroad Superintendents Association of New England was held at the Café Martin, New York, on the night of March 3. The association is composed of prominent railroad officials throughout New England, many of whom are ex-telegraphers. Among those present were C. E. Lee, E. A. Smith, S. A. D. Forristall, G. H. Folger, H. C. Robinson and J. B. McMann, of the Boston and Maine Railroad; A. W. Martin, W. L. Derr, I. N. Marshall, E. H. Morse, N. E. Smith, J. C. Sanborn, A. R. Whaley, George T. Taylor, H. J. Hill, W. R. Mooney and R. Fitzmorris, of the New York, New Haven and Hartford Railroad; W. K. Hallett, Bangor and Aroostook Railroad; A. H. Grovenor, H. W. Davis, J. K. Hopson, C. L. Gilpatrick and others.

The next meeting of the Railway Signal Association will be held in the Great Northern Hotel, Chicago, Monday, March 19, beginning at 10 o'clock sharp. There will be three sessions. At this meeting a new constitution and by-laws will be presented for adoption. Several papers will be read, including one by F. B. Corey, of the railway engineering department of the General Electric Company, whose topic will be "Charging of Storage Batteries from Alternating Current Circuits;" one by W. N. Spangler, supervisor of signals, West Jersey and Seashore Railroad, on "Substituting Track Circuits for Detector Bars," and another by W. A. D. Short, signal engineer, Illinois Central Railroad, entitled, "Power Operated Distant Signals."

Recent Telegraph Patents.

A patent, No. 813,710, for a relay, has been granted to H. Johannsen, Stockholm, Sweden.

A patent, No. 813,512, for a circuit closer for telegraph keys, has been issued to Herbert R. Nevens, of Portland, Me.

A patent, No. 813,184, for a relay, has been obtained by Angel Vera and Louis G. Vera, of Queretaro, Mexico. In combination with an armature are opposed electro-magnets, one arranged to operate more rapidly than the other, the more rapid of the magnets actuating the armature upon closing of a circuit, and the other magnet actuating the armature upon opening the circuit.

The following patents have expired:

399,154; automatic telegraphy. J. O'Neil, New York.

398,833; printing telegraph. F. H. W. Higgins, London, Eng.

Recent New York Visitor.

Mr. I. McMichael, vice-president and general manager of the Great North Western Telegraph Company, Toronto, Ont.

To Preserve the Lincoln Farm.

The Lincoln Farm Association is the title of an organization for the purpose of converting the Lincoln birthplace farm into a national park as a memorial to the great President. A movement of this kind should appeal to the best emotions of every patriotic American. The proposition has received the endorsement of the leading men of the nation from President Roosevelt and former President Cleveland down. Men prominent in affairs are united in giving the project commendation. The initial movement was started by Mr. Collier, of Collier's magazine, and in order to save the property he purchased it. He has conveyed the deed of the property to the Lincoln Farm Association, and contributions of any sum not less than twenty-five cents or more than twenty-five dollars are now solicited from the people at large in order to carry out the plan proposed of converting the farm into a national park. Contributions of whatever amount, small or large, will constitute the giver as a perpetual member of the Lincoln Farm Association, and he will receive a handsomely engraved certificate of membership, the amount of the contribution not, however, being made public. The president and trustees of the association are among the most prominent men of the nation. The invitation to subscribe will appeal strongly to telegraphers, from the fact that Clarence H. Mackay, president of the Commercial Cable Company and of the Postal Telegraph-Cable Company, is the treasurer of the association, with offices at 74 Broadway, New York.

"The Strenuous Life," which present day conditions force on every man, and upon many women who are or who desire to be self-dependent, demands not only firmness of purpose and resolution of will, but intelligent thought and wisely directed action. With these qualities judiciously applied the "strenuous life" becomes the successful life.

The Automatic Telegraph as a Public Utility.

BY ROMYN HITCHCOCK.

(Continued from page 88.)

Automatic working possesses such distinct advantages in speed, accuracy and economy, that it will as surely replace hand methods for general commercial telegraphy as machinery has taken the place of hand labor in other arts. Yet despite the facts, established beyond dispute, telegraph authorities of the old school in high repute, seem quite unable to acknowledge the obvious consequences—or is it that they are unwilling? For example, quoting from no less authority than a president or chief electrician of one of the companies, we find these words: "Professor Morse did not realize that he had invented the best, cheapest and quickest system of telegraphy that has been introduced up to the present time." Further: "I know of no automatic system that can be satisfactorily employed to move the great daily telegraph traffic of the country so expeditiously and economically as is done by the present Morse." In another place we are told that the writer knows of no better way to increase facilities of communication than by putting up additional wires!

The famous Wheatstone automatic invention owes its present high state of perfection to the far-sighted policy of the telegraph authorities of Great Britain, who recognized, many years ago, the benefits of automatic working. The Wheatstone apparatus, however, is not sufficiently rapid to utilize conductors up to a speed nearing the electrical limitation. Its speed is restricted mechanically while the ideal system must have only electrical limitation. The Wheatstone has proved a valuable adjunct to key working wherever it has been applied, finding its most extended use perhaps in Great Britain; but its efficiency falls short of what is required to establish automatic telegraphy on a plane by itself.

A rapid automatic system cannot be properly utilized if made supplementary to hand methods. The cost of a nation's telegraphs is determined by the expense of the prevailing methods used. The full benefits of automatic working can only be enjoyed when all its economies are utilized. It must be the great system of through lines, and also of all lines connecting centres of considerable population. It must be the trunk line system, comparable to the trunk line railroads on which fast expresses travel, the short lines branching out from the main line like branch railroads, which act as feeders to the main line.

Wherever the volume of business offered exceeds the carrying capacity of a wire operated by hand methods, it is much cheaper to add a set of automatic machines than to construct and maintain an additional wire. This is independent of any great increase in speed, for there is no reason why an automatic machine should not be run

as slowly as may be desired. The proposition is self-evident when long lines are concerned, but it has advantages for short lines also. The question hinges not on the length of the line but on the volume of business which low prices will develop. There are always some people who wish to communicate with other people in neighboring towns. A letter is too slow, requiring a day to get a reply, the telegraph is too expensive for everyday use, the telephone may not be available, but a letter-telegram would meet the requirements admirably. A wire only ten miles in length can be advantageously equipped for automatic working if the population is large enough to make sufficient business. A letter telegram saves the time of train transportation as well as the attendant delays of hours when there are no trains, and the time of collection of mail sacks and distribution of their contents. It is intermediate between a two-cent letter and a short telegram and is not usually sufficiently urgent to require instant delivery.

So long as the telegraph administration aims to give the least possible service for the highest price it can exact from patrons, there will be no need for high-speed methods. But the situation changes when we consider the effect of the great reduction in charges which rapid automatic operation renders possible. The immediate effect will be an incalculable increase in the volume of business offered. The influence of costs upon the volume of correspondence has been investigated in different countries, and statistics are available. But we have no experience of the effect of such large reductions in telegraph charges as the rapid automatic makes possible and, indeed, advisable if not imperative from a business standpoint. To assume that if prices are reduced to one-tenth, ten times as many telegrams of fifty words each will be sent as of ten-word telegrams now, is a conservative estimate.

The great, universal benefit of thus cheapening telegraphy will be to make the telegraph for the first time a real public utility, a medium of correspondence available to all. The somewhat larger cost over mail correspondence will be offset by the advantages and benefits of electrical speed. The ideal plan of delivery of such communications would be through local post-offices.

When one considers the subject in detail it becomes clear that electric signaling ought not to be expensive. The cost being principally in the wire plant, it can easily be shown that a sufficient number of messages at a nominal price for each,—a number far below the carrying power of the wire—would suffice to make investment in a line of copper 1,000 miles long exceedingly profitable. The fundamental question, therefore, is, commercially speaking, one of electrical speed limitation—how rapidly the signaling can be done in practice? This fact being known there is a determinable charge for letter-telegrams which will attract a maximum of business and yield the largest re-

turns on the invested capital.

Those who regard the telegraph as necessarily an expensive, emergency service rather than a possible public utility and convenience, will scarcely be prepared to credit the cheapness of automatic methods. Since the cost of a message is determined by the volume of business carried by a wire, the relative costs of telegraphing by different methods depend primarily upon the item of transmission. For clearly the cost of preparing messages on tape for machine transmission, and of transcribing them at the receiving station, cannot enter as a prime factor in the comparison, since these costs are relatively trivial and the operations are common to all methods, although carried out in somewhat different ways; in fact, the cost of this service for automatic working is less than it is possible to make it for hand working. In any case, these are costs which the telegraph correspondence must necessarily bear; but in the ideal automatic system it is not necessary that this service should be rendered by the telegraph company. It can, and undoubtedly will be done, principally by typewriters and stenographers in private business offices, the telegraph corporation being only the transmitting agent of correspondence thus privately prepared, no word of which becomes known to the telegraph operators. Thus the telegraph charges would be for transmission of messages only, and all messages thus prepared are absolutely private and secret.

The discovery of a method whereby the static capacity of a telegraph line is utilized to increase the speed of signaling is one of the most important. In machine telegraphy the signaling impulses must be accurately recorded at a speed of 250 to 300 marking impulses in a second of time. Experimentally, utilizing the static charge of the line, records have been made at a speed of 2,000 marks a second.

In the light of the remarkable changes brought about within a generation in the world of varied activities, one cannot predict the effect of high-speed telegraphy upon daily, social and business correspondence. To say that it is destined to be mostly carried by electric impulses over wires, leaving but a comparatively small proportion, the most voluminous and heavy, to follow as letters on railway trains, may seem wildly fanciful, incredible. Perhaps it is so. But does anybody know? Would not the benefits of quicker communication be universally felt? And when once recognized would they ever be relinquished? The whole question is one fundamentally of practicability and costs.

A simple estimate will indicate the commercial significance of high-speed transmission and throw some light upon the possibilities before us. Consider messages privately prepared on tapes for transmission, by use of a machine like a typewriter, and transcribed by the persons receiving them, so that the charge is made for transmission only. Taking a line 1,000 miles long, working at a speed of 1,000 words a minute the charge

might be five cents for messages of 50 words. The annual income of one 1,000-mile wire at this rate would easily exceed a quarter of a million dollars.

Pole Support for Swampy Ground.

The American Telephone Journal has this to say about the pole support for swampy land where the mud is too soft and too deep to give a solid bottom and firm support for a pole:

"It is considered good practice to support poles in such locations and hold them in line by simply bolting to the foot of the pole two pieces of creosoted pine planking, crossing at right angles. This forms a very cheap support and one which is easily applied. It is sometimes necessary to reinforce the pole by putting in a push and brace, the foot being of the same construction as that for the base of the pole. An additional precaution is sometimes taken with lines exposed to strong winds. In this case a hole about the base of the pole is filled with concrete, which acts as a counterweight to assist in holding it upright.

"Where neither of these methods could be applied on account of the extreme softness of the ground, it is customary to plant the pole and to bolt to it just above the ground and at right angles to the line, two pieces of planking about ten feet long. To these two planks are nailed short pieces of plank about three feet long, these planks being nailed at right angles to the ten foot plank. Four pieces of planking are then fastened, two on each side of the pole, extending from a point on the pole about five feet above the ground to each end of the before-mentioned ten foot plank.

"With this form of construction the weight of the poles and line is distributed over a large bearing surface in such a manner as to not only prevent the line from sinking, but to brace it against a tension tending to tip the pole to one side."

William Marconi to Lecture Before the New York Electrical Society.

William Marconi will lecture before the New York Electrical Society, at the auditorium of Horace Mann School, Teachers' College, Columbia University, Wednesday evening, March 28. Word has been received that Mr. Marconi will make a special trip to this country to deliver this lecture, which was postponed from January 16 because of Mr. Marconi's illness.

Our advice to every young man is: Know one thing thoroughly. Specialization is the order of the times and concentration is a matter of great importance. It is not the man who knows a little of everything that succeeds or is sought after; it is the man that knows one thing and knows that one thing better than anybody else. Learn to do one thing well.

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NEW YORK, MARCH 16, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientage. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The Western Union Telegraph Company Fifty Years Old.

This year the Western Union Telegraph Company rounds out fifty years of corporate existence. It has reached its golden jubilee. In no minor strain should the circumstance, so full of happy omen, be heralded. Rather should it be a time of congratulation, an opportunity for an expression of good will and of rejoicing. It is fitting that so auspicious an event should have suitable mention. The details, therefore, of the history of this great corporation, the largest and most powerful telegraph company in the world, the record of its wonderful development and of its achievements are fully recounted elsewhere in this issue. The story, graphic in its presentation, will be read with intense interest in every land the world over, for it unfolds a narrative of accomplishment, frequently executed under the

gravest of difficulties, in promoting according to the measure of practical success, the most subtle, ingenious and important of modern inventions.

Telegraphy, although a well-established fact, was nevertheless, comparatively speaking, a new art in 1856, when on April 4 of that year the Western Union Telegraph Company was granted its charter by the State of New York. Prior to that date its general acceptance as a means of communication had been limited, perhaps because facilities were narrow; its constructive progress was slow. Building, however, upon the foundation of its immediate predecessor, the New York and Mississippi Valley Printing Telegraph Company, the merger which resulted in the formation of the Western Union Telegraph Company, brought together disunited, feeble and conflicting interests, welding the same into a single, compact whole. A mighty impulse was imparted to the new relations thus secured, which at once gave a distinct, better defined and more tangible direction to the telegraph and its future in America. It was the beginning of the magnificent structure that has since been reared on this initial proceeding, and which has since caused the North American continent to be covered with a network of wires, and submarine cables to be laid in every sea, for the influences exerted by this great company have been most potent.

It was auspicious that the control of this company was originally vested in the hands of men of strong perceptions, of large mental calibre, having the courage of their convictions, who had absolute faith in the enterprise upon which they had entered. Under skillful management, impetus was gained, weakness developed into strength and the enormous commercial value of telegraphy became more and more apparent. The transmission of executive control through succeeding administrations has uniformly placed strong men in office. This company has been fortunate in this respect, for under whatever vicissitudes of fortune it may have labored at any time in the long period of fifty years, it has, with the practice of indomitable energy, not only been able to overcome all obstacles to progress, but has pressed forward with giant strides, gaining in strength and power and broadening its field of operations. It is a record of growth that stands without parallel.

The fifty years of life of the Western Union Telegraph Company has been productive of such vast results, so intimately associated in promoting the development and advancing the civilization of the country by its progressive methods and ready means of communication afforded, which gave to the newspaper press its opportunity to rise to its present strength in disseminating news and information and to annihilate time and distance, that however much in these busy latter days we have come to regard and accept the ample service rendered as a matter of course, it is well to pause and consider what has led up to

it, its beginning, its growth and full fruition. In this spirit of retrospect and of acknowledgement, the golden jubilee, now at hand, will awaken a very general sense of sympathetic and responsive interest.

Bogus Telegrams Again.

Apropos of our article in the issue of February 16 on the "Misuse of Fac-Simile Telegraph Blanks for Advertising Purposes," an instance comes to our knowledge from an interior town of a western state where a theatrical company notified the populace individually by means of bogus telegrams, advertising by a catchy phrase therein the advent of the show. The method was well calculated, even though it should successfully advertise the coming play, to cast ridicule and contumely upon the telegraph company having a local office, whose envelope and message blank it grossly caricatured. In this instance, like many others of the same kind, the case was aggravated by the fact that these bogus telegrams were delivered by the telegraph company itself, the consent of the manager thereto being gained by the argument that managers elsewhere had consented to make such deliveries. Whether that statement was true or not, common sense ought to have dictated to the manager to resist the impudence of any proposition that would tend to bring discredit upon the company whose best interests he was bound to serve. Furthermore, it should be well-known to any manager who lays claim to intelligence that well-informed managers would not lend themselves and the facilities of their offices to the furtherance of such obviously fraudulent methods however disguised by playful words and expressions. A fraud is a fraud, no matter whether it be a big one or a little one. A telegraph company is organized for the conduct of serious business and is not expected to play the part of a clown in any such buffoonry.

It should also be well-known to every manager as a part of his stock of general information governing the conduct of his office, that the telegraph companies frown upon the practice of sending bogus telegrams and their attorneys seek to stamp out such action by legal measures whenever and wherever possible. A bogus telegram, no matter what the intent of its senders, or how close or how remote it bears resemblance to the genuine article, is issued contrary to and in defiance of the law. No explanation or excuse can get around this fact, and the stern suppression of all violations of so just an enactment should find sympathy and active support by managers and others everywhere.

"Tattling Operators."

A man who had once been a telegraph operator in Newport made a curious revelation recently while testifying at the trial of Mr. Hapgood, says the New York Tribune. He admitted having used for pecuniary profit, in more ways than one, information contained in personal messages which he had been called upon in a business capacity to send or receive. A more recent but isolated instance of the same

practice has come to light on the Pacific Coast. It is said that a prominent St. Louis brewer disapproved of the attachment which a certain German army officer entertained for his daughter. The two young people were reported to be at Pasadena, Cal., and a despatch from Los Angeles to eastern newspapers declared that the irritated father had wired to the young woman, "Do nothing rash."

The question arises, if such a message was really sent at all, how did its contents become known? The supposed recipient and the officer referred to are represented by the press despatch in question as declining to talk about their plans. At the time when the story first appeared in print the distressed father had not yet reached the coast. It is safe to conclude that not one of the three persons chiefly concerned has confided what must be regarded a family secret to the public. There is an equally strong probability that it was divulged by a domestic or a telegraph operator, either in Pasadena or elsewhere in California. If an operator is responsible for the leak, he may have cherished no intention of levying blackmail or even of securing a cash compensation for the service rendered to local reporters, but he has been guilty of a grave offence, all the same.

It is to be feared that a considerable number of employees of telegraph companies fail to realize that they occupy positions of trust. No conscientious bank clerk would feel at liberty to tell an outsider the size of a depositor's balance. His employers would dismiss him instantly if they knew he had done so. The information belongs solely to the depositor and to the bank. In like manner a telegraph message is the exclusive property of the sender and recipient. It is for one of them to reveal its nature if anybody does so, and an operator who betrays either the text or purport of such a communication imitates a person who uses another's property without permission. There is not the slightest reason to believe that the author of the telegram in question was willing to have it published. He would perform a valuable service to the public, therefore, if he would investigate the affair thoroughly enough to discover who the offender is, and take the proper steps to inflict punishment. If a telegraph operator shall be found to be responsible, it should be an easy matter to secure his discharge.

It may not be out of place to recall another recent occurrence which in one respect resembles the apparent breach of trust just committed in California, because there are suggestive points of dissimilarity. A few weeks ago the Arctic explorer Amundsen made a sledge trip from the mouth of the Mackenzie River to the nearest telegraph station in Alaska, and sent from that point to Nansen tidings of his success in achieving the Northwest Passage without harm and of having obtained the magnetic data which he had sought. At Seattle it was necessary to repeat his message, and either the operator who received it over the government cable there or the one who put it on the land wire for transmission over the next section of the route, seems to have felt justified in making the telegram public immediately. The proceeding was technically but perhaps not morally

wrong. It does not appear that either Amundsen or Nansen authorized it, yet there can be no doubt that both of them would have been glad to share the news with the whole civilized world. Had it not been communicated to the press while on its way, it would have been cabled back to America from Europe within twenty-four hours after reaching Sweden. The worst feature of the premature announcement was that it was an invasion of privacy and of law.

[The subject, substantially as it appears in the "Tribune" article, has been given considerable publicity in the press of the country, and because a false conception of the integrity of telegraph operators might result therefrom in the mind of the general public if the matter were allowed to pass unnoticed, we give it attention. Deductions are drawn of the "tattling" qualities of operators that are wholly without warrant, that will not bear the light of investigation, for in no instance have the implied charges been proven; no evidence of guilt is shown. The inuendo gratuitously expressed cannot be sustained, and such careless writing, in effect reflecting upon the character and honor of a large class of conscientious and hardworking body of men, carefully trained in the requirements of their profession, should not go unrebuked. It does not appear that the Newport operator referred to was ever employed by a telegraph company at that place. The case of the St. Louis brewer is almost unworthy of notice. The attempt to fasten a leakage of information upon an innocent operator is begging the question. The publicity attained may have been due to a hundred causes. Most likely the origin may properly be traced to unguarded conversation with some one or more persons connected with the several households concerned in the affair. The probabilities of a leak in a telegraph office are very remote. For, where thousands of messages are being constantly handled, the work of the average operator becomes automatic largely in its performance, no time being allowed or inclination felt even to carefully read over and charge the mind with the contents of important dispatches. The grist in the telegraphic mill is without distinction. The case of the Amundsen telegram having been made public, is clear enough. The explorer made his way to the nearest Alaskan telegraph office on a sled. There, in addition to sending his telegram, he undoubtedly publicly expressed himself regarding the nature of his discovery. This was natural, and it was also natural that an indefatigable newspaper correspondent realizing the importance of the news should at once have telegraphed it to his home paper at Seattle where its publication gave the news world-wide currency. It is time that uncalled for aspersions upon the rectitude of the telegraph operator were stopped.—Editor.]

The Author of the Message, "What Hath God Wrought."

The first telegraph message was sent by a seventeen-year-old girl, Miss Annie Ellsworth, who

carried the news to Professor Morse of the passage of the bill by Congress appropriating \$30,000 for the construction of a trial line between Baltimore and Washington. It was then that he assured her she should write the first message, and a little more than a year later, at her mother's suggestion, Miss Ellsworth, who was the daughter of the Commissioner of Patents, himself a great friend of Prof. Morse, sent over the wires the words of the Psalmist. "What hath God wrought?" The original message had always been in Miss Ellsworth's keeping, and a copy of it is filed in the archives of the Historical Association of the city of Hartford, Conn. She married Roswell Smith, of Lafayette, Indiana, who was for many years editor of the Century magazine, and died at Montclair, N. J., January 21, 1901, at the age of seventy-three years.

The Age Limit.

An illustration of how the age limit rule adopted by several railroad companies about two years ago, and which is rapidly lapsing into a state of "innocuous desuetude," is regarded by representative railroad men, is shown by an interview with Henry N. Rockwell, who was recently appointed a member of the New York Board of Railroad Commissioners.

When asked if he endorsed the "young man theory," as applied to the rank and file of the service, Commissioner Rockwell said:

"Emphatically no; so far as my observation and experience have gone during forty years of active railroad service, a railroad man—an engineer, conductor, telegrapher, towerman and so on—does not render his best service until he is past forty years of age. His best powers in the way of care and general efficiency remain unimpaired until he is sixty or sixty-five years old, according to the individual. Among several good and sufficient reasons for this, one is that a man at such a period of life is generally settled, has a family and lives methodically. One reason why there are fewer railroad accidents in England than in this country is probably because the age of railroad workers is greater on the average over there. Men of family are generally given the preference, other things being equal, over unmarried applicants for the most responsible operating positions in the service."—The Railroad Employee.

To reach success every project and plan, every nerve and brain cell, every thought and act is brought into subserviency to this one all-absorbing purpose. The ambitious and self-respecting can find happiness in nothing short of success.

No up-to-date telegrapher can afford to be without TELEGRAPH AGE. It furnishes him with information essential to his welfare. Send for a sample copy.

Early Telegraphs in Pennsylvania.

A correspondent in Pennsylvania has this to say concerning one of the initial lines of telegraph across the Allegheny mountains:

"Fifty-one years ago, in 1855, a telegraph line consisting of a single wire was built from Philadelphia to Pittsburg by way of Lancaster, Chambersburg, Bedford, Stoyestown and Lionier. Although the practicability of Prof. Morse's invention has been fully demonstrated, the wise men of the section through which the line passed shook their heads and characterized the work as a piece of tomfoolery. It was freely prophesied that, aside from its doubtful utility, a line could never be maintained across the Allegheny and Laurel Hill mountains. Winter's storms and ice and snow and summer's lightning would soon put an end to this foolishness, they said.

"However, in the face of all these adverse opinions and repeated warnings offered gratuitously by the unanimous vote of the Wayback Club at their regular tri-daily meetings at the cross-roads store, the projectors completed the line and established an office in Stoyestown in the general store of the late John F. Rainey.

"When the line was opened for business Mr. Rainey's brother-in-law and clerk, James S. Zimmerman, now of Pittsburg, was installed as operator, having previously been called to an eastern office and instructed in the new art. This was the first telegraph office opened in Somerset County, Pa., and created a great sensation.

"People came for miles to see this new means of communication and went away doubting. The Wayback Club transferred its meeting place to the telegraph office, which was also the post-office, and listened in openmouthed wonder to the ticking of the instrument.

"People along the line in the mountains were seen gazing intently on the wire in the hope of seeing a message pass, and when nothing could be seen flatly refused to believe that anything had flashed over the wire.

"Messages were then received by the Morse register on tape. One evening a stranger came into the store and while seated behind the stove listened to the ticking of the instrument on the desk in front. He wrote out the message and read it to the assembled crowd. It created consternation. Was this man gifted with supernatural power? He had simply read by sound.

"But in a short time the novelty of the invention wore off and it was accepted as a success."

If the United States military telegraph pension bill becomes law, as is expected, during the present session of Congress, Mr. Crosby J. Ryan, of Detroit, Mich., who is blind as a result of exposure during the Civil War in performing telegraphic duties for Generals McClellan, Williams and others, will receive the benefits of the measure by being pensioned by the National Government.

Telegraphers' Mutual Benefit Association.

From the assessment notice just mailed to the members of the Telegraphers' Mutual Benefit Association we extract the following, which ought to be a strong inducement to members of the craft to affiliate with this leading fraternal insurance association:

"One of the prime features of the administration of telegraph societies is full publicity. In addition to the details of the business for the current year, this association has always published a synopsis of its reports since organization, thus affording to every member as well as to every prospective applicant for membership, a comprehensive view of operations unique in the annals of co-operation. Starting in a small way amid the strain and stress which characterized the period at the close of the Civil War, and passing in early days through epidemics which devastated a large part of the country, it has steadily grown to its present position in the insurance world, after boldly proclaiming more than eighteen years ago, that benefits could not continue to be paid unless members' payments were adequate; while economy in expenses coupled with effectiveness in operation and careful selection of healthy risks meant that the annual cost would be kept to the lowest point.

"This association was one of the first in the field; and the principle of assessment co-operation for protection of the family, which it founded in the telegraph fraternity, has wrought untold good and has been found to be just as safe and enduring as is any other principle.

"If the present membership is desirous that this principle should be carried to a later generation of telegraphers it behooves them to work as did the pioneers of the movement, by pointing out to the eligible persons of their acquaintance that this is now the oldest fraternal co-operative insurance association in the country; that in the thirty-eight years of its existence, during which it disbursed nearly \$1,200,000, it never has had an overdue claim; that its expenses are nominal, its annual charge to each member the lowest consistent with security; that the field for the work was never greater than now, and that this association occupies its chosen field, having the protection of the home of the telegraph and telephone employee as the only purpose for which it exists."

Every man is the architect of his own fortune—the arbiter of his own destiny—in the most emphatic sense. Therefore every young man should select a career in life and hold steadfastly and unwaveringly to the accomplishment of his purpose. It is not the genius who makes the world stand amazed at his achievements. It is the earnest, faithful, conscientious worker who forges his way upward and onward, and wins the laurels of noble achievement. Success is won by deserving it—by grasping the golden key of opportunity and unlocking the door of splendid possibilities.

More Patents for Mr. Barclay.

Mr. John C. Barclay, assistant general manager and electrical engineer of the Western Union Telegraph Company, New York, has recently been granted several patents, covering improvements on his printing telegraph system, and, we understand, a large number of companion patents are pending. Three patents were issued to Mr. Barclay on February 6, one of which covers a keyboard telegraph transmitter; another relates to the printing mechanism of the receiving apparatus and the third has for its subject a relay used in connection with the transmitting apparatus. The keyboard transmitter is intended primarily for use in connection with Mr. Barclay's page-printing telegraph printer, says the *Electrical World*, although it is not limited to this particular application.

The essential parts in combination consist of several adjustable stops or circuit-controlling devices, adjustably mounted on a movable drum, and arranged to be adjusted in position according to the character to be transmitted. The stops are arranged and set into position by the manipulation of the keys on the keyboard, which is practically similar to that of the ordinary typewriter. The stops so set represent the dots, dashes and spaces comprising the characters of the alphabet or code, the next stop in the sequence of operations being the actual transmission of the characters to the line. One of the problems in developing instruments of this class has been to devise means to secure uniform spacing between characters. The letter "E," for instance, in the Morse code is represented by one dot, while the character for a paragraph is four dashes, and that for the numeral 6 is six dots. If unit time were allotted per character it is obvious that the spacing between characters would vary inversely as their length. It is necessary in instruments of this kind to keep the space between characters uniform.

Mr. Barclay accomplishes this result in a very ingenious manner, and this is one of the objects of the present invention, others being, certain and rapid operation, ease of operation, ease of inspection and keeping in order, and relative economy. The stops may be set either by electro-mechanical means or by mechanical means. The drawings show the apparatus operated by electromagnets, these being controlled by the depression of the key levers by hand. For the protection of the instrument the transmitter is not connected directly to the line, but operates a relay which repeats the signals into the main circuit. The second patent covers an improvement in the printing mechanism of the page-printing receiving apparatus used by Mr. Barclay in the printing system. The type characters are arranged on the surface of a wheel, like a ticker type wheel, which is revolved until the desired character is brought into printing position; the wheel is then moved forward into contact with the paper, thus printing the characters in sequence.

It was found that when such printing mechanism was operated at high speed some characters missed position. The object of Mr. Barclay's invention is to prevent this missing of characters and secure certainty and reliability of action. The relay described in the third patent is designed to control a large number of electrical circuits and is particularly intended for use in Mr. Barclay's printing telegraph system. It may be either of the polar or the neutral type. The instrument represented in the drawing has an extension of the armature lever, at the outer end of which is a recess which engages a pin on a rocker or drum placed vertically upon the base of the instrument. The body of the drum is of insulating material, but through it, longitudinally, are arranged contact pins which close the various circuits by coming into contact with contact fingers on one side or the other as the armature lever vibrates. The contact fingers, representing circuit terminals, are arranged in two vertical rows parallel to the axis of the drum, so that when the armature lever is on one side one row of contact fingers is connected in circuit and with the armature on the other side the other row is in service. The pins project through the rocker from back to front. The back contacts constitute the other terminals of the circuits. In a general way the drum and its functions are similar to those of the electric railway car controller on a small scale.

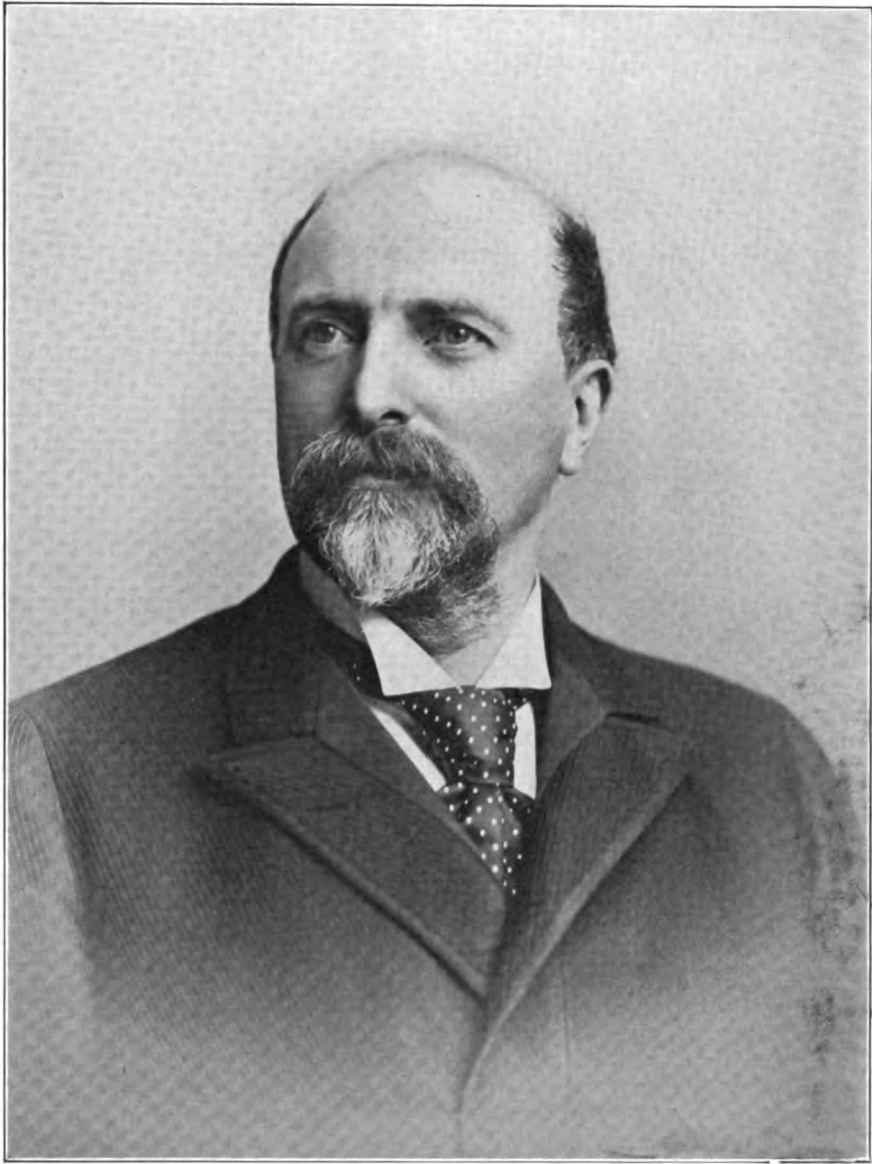
A Unique Plan of Laying Wires.

The use of ferrets to string the wires in conduits had been a joke for years with the men in charge of underground construction. In this connection Superintendent Cline of the Bell Telephone Company at Terre Haute, Ind., recently said:

"As with a good many other simple methods, we refused to try ferrets because it sounded like a good newspaper story and was impractical. But a test has been made and we know it is the best way to put the lead wire through the ducts. A sort of harness is put on the little animal and attached to it is a strong but light fish line. At the next opening of the duct a piece of meat was hung, and the animal tugged away at his cable of fish line to get to the meat.

"In Terre Haute we will try another plan. We will turn a rat loose in the duct and let the ferret go after the rodent. At the opening the rat will run into the trap or bag. We could not let the ferrets have the meat for as soon as they get something in their stomach they go on a strike. We shall not let them have the rats until they have done a day's job. The old method of using wooden rods for pushing the wires through the duct took the labor of several men, and a ferret will do all that three men can do."

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of *TELEGRAPH AGE*, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.



COL. ROBERT C. CLOWRY.

Seventh president of the Western Union Telegraph Company, now in office, whose term began March 12, 1902.

FIFTIETH ANNIVERSARY OF THE WESTERN UNION TELEGRAPH COMPANY.

FROM every point of view the nineteenth century witnessed the most stupendous awakening of the human mind as shown in every field of ethical thought and practical endeavor. New intellectual prerogatives seemed to be in the ascendant, and there came the most remarkable advancement within the scope of science and of every form of invention calculated to promote and develop civilization, the world has ever known. There was a sudden breaking away from the past; its traditions and prejudices were swept one side and the emergence to a broader and more sublime knowledge gained by the solution of hidden mysteries and of the possibilities of the future dawned almost as from the operation of a magic wand.

Within the period named came the invention of the telegraph. The story of its evolution has been told, and to the master mind that directed it into being we delight to render homage and honor. But of the great agencies that have since given the telegraph direction and power, and hence vastly increased possibilities of usefulness beyond anything at first conceived, the story in its details is not so familiar. We accept the fact of the telegraph company, but how it came into corporate existence and developed in potentiality of purpose we are not so well informed. The story, then, told in sequential form of an organization whose purpose it is to provide facilities for the dissemination of knowledge, of news and of commercial needs broadcast throughout the country and the world, must in the very nature of the case be of profound interest.

To gather up and consolidate minor companies, comparatively local in themselves, and shape them into a single, compact, connecting, homogeneous whole, imparting life and financial strength in place of weakness and insecurity; reaching out with giant strides, ever in the van, and gridironing the country with wires until its service penetrates all sections, and with its cable systems rendering connection close with foreign lands, is briefly the history of the fifty years of life of the Western Union Telegraph Company. The moneyed resources and executive force that have been able to bring about this vast accomplishment, reflects in the best manner the genius and indomitable spirit of American enterprise.

The controlling influences now at work in further extending and developing this great property have never been exceeded in intelligence and in practical capacity. Probably no other administration has ever had so thorough and complete a grasp of details as that now in power. This is abundantly demonstrated in the closely directed supervision of the system constantly maintained in every part and the resultant raising of the standard in equipment and service everywhere manifest.

While the exigencies of the times, the growing strength of various forms of competition, renders modern telegraphic management more difficult than that of former years, because demands are larger, more exacting and because more careful economies

must be practiced, it will nevertheless be freely admitted that the general efficiency of the Western Union Telegraph Company has never before reached such a high plane of excellence.

The current year of 1906, as already stated, marks the fiftieth anniversary of the founding of the Western Union Telegraph Company. By act of the Legislature of the State of New York, passed April 4, 1856, the company was granted its original charter. Prior to that date and between the years 1851 and 1856, the predecessor company was known as the New York and Mississippi Valley Printing Telegraph Company. The change to the name of the Western Union was to shorten a long title and to adopt one that would indicate the union of the Western lines, which had just been consummated, into one compact system.

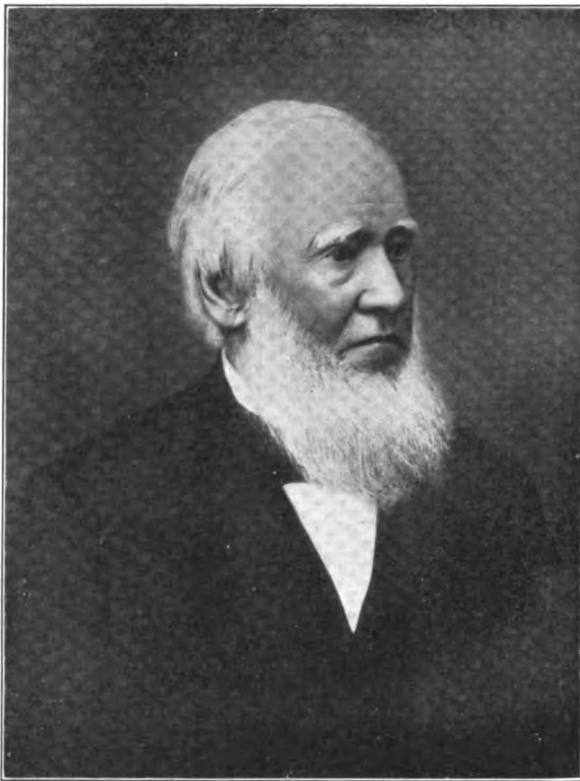
Mr. Abijah R. Brewer, the secretary of the Western Union Telegraph Company and its historian, whose mind is a veritable treasure house of important facts concerning the telegraph in general and his own company in particular, has delved deeply into the history of the Western Union company. What he has to say in this respect of the growth and development of his company forms a most interesting chapter in telegraphic history, and is told with a detailed reference to facts, which shows careful research, establishing him as an authority in such matters probably without equal. We are indebted to Mr. Brewer for much of our information, and in what follows we quote copiously from his writings.

To not a few persons at the present day it has appeared strange that the telegraph was not at first established through the agency of a single company; but it is obvious that such a course could not be followed, and that the owners of the patents, under which the various lines of telegraph were then operated, after years of disappointment, pursued the natural, and, in fact, the only course open to them, of selling to such purchasers as offered, and on the best terms they could obtain. The number of companies which grew up in this manner was afterwards multiplied by unfortunate quarrels and differences among those interested in the patents, until, by 1851, over fifty different telegraph companies were in operation in different parts of the United States.

Most of the companies were licensed by the owners of the Morse patents; a few used the devices of Alexander Bain, which were afterwards adjudged to infringe the Morse, and one or two used another and very attractive instrument, which had just been brought to completion, and which was not an infringement of any patent. This was the printing telegraph, invented by Royal E. House, of Vermont, which seemed to possess a feature of superiority over the Morse in that the messages it received were printed in plain Roman letters, ready for delivery to the persons addressed, while the Morse messages were received in dots and dashes, which had to be translated and written out by the operators before they could be delivered.

Lines to operate the House instruments were built

between New York City and Boston, and between New York City and Philadelphia prior to 1850, and, at about that time, Judge Samuel L. Selden, of Rochester, N. Y., secured an agency for the extension of the House system through the rest of the United States. When, in arranging for the construction of his New York City to Buffalo line, Judge Selden reached the city of Rochester, he applied to his friends in that place and vicinity for funds to extend the line westward. This solicitation for assistance from the people of Rochester led to the organization in that place of a company which afterwards became the Western Union Telegraph Company, and from that place it was managed for fifteen years.



HENRY S. POTTER.

President of the New York and Mississippi Valley Printing Telegraph Company, the immediate predecessor of the Western Union Telegraph Company, and for a short time its first president, whose term of office extended from April 2, 1851, to July 30, 1856.

ORGANIZATION OF THE WESTERN UNION TELEGRAPH COMPANY.

The undertaking upon which the projectors of the new company entered was the extension throughout the West of the House telegraph system. To carry on the work they organized the "New York and Mississippi Valley Printing Telegraph Company" (afterwards the Western Union), with a proposed capital of \$360,000, to build a line of two wires from Buffalo to St. Louis, Mo., as a nucleus for further extensions. The plan thus indicated failed, in consequence of the inadequacy of subscriptions to stock, and the promoters were consequently compelled to modify their plans and make special con-

cessions to attract subscriptions. These concessions brought a few subscriptions, but only enough to build a line of one wire over a part of the route originally selected from Buffalo to Louisville, and amended articles of association were therefore filed, covering the route and reducing the stock to \$170,000. This was the original capital of the Western Union Telegraph Company.

If the promoters were unfortunate in not being able to carry out their undertaking on the scale first outlined, they were fortunate in the following respects:

Their license contained a provision designed to encourage growth and extensions, instead of the customary restrictions limiting the line to a single



HIRAM SIBLEY.

Second president of the Western Union Telegraph Company, whose term of office extended from July 30, 1856, to July 26, 1865.

route; telegraph construction had passed the worst phases of the ruinous experimental stage and assumed a fairly practical form by the time the work of the new company began. They were also fortunate in the composition of the board of directors, which contained a working majority of men of force of character and of constancy of purpose. The care exercised by these directors in drawing the specifications for the construction of the line, and their close supervision of the work of the builders, resulted in the erection of a really superior line, which they operated with close economy, yet, at the end of three years, the company had run into debt and the money invested in the line was believed to be lost by most of the people of Rochester. Wire, instruments and other material had been purchased

on credit, and the following extract from the minutes of the executive committee, June 26, 1852, shows that even this resource was precarious:

"Resolved, That the secretary be authorized to order or purchase two instruments for this line of J. B. Richards if he will furnish them after an explanation of the condition of the line and the financial affairs of the company."

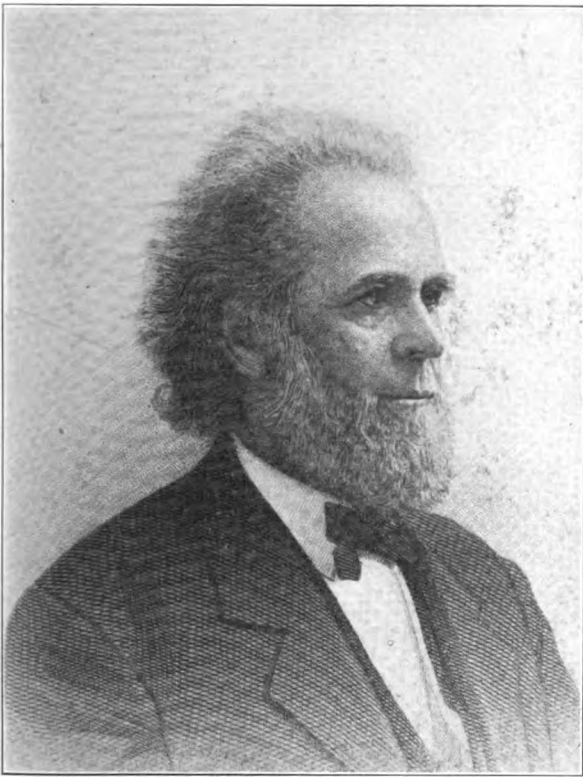
CONDITION OF THE TELEGRAPH IN THE WEST IN 1854.

Although about fifteen thousand dollars in debt the new company was in better condition than most of the other telegraph companies in the West. Two rival systems, consisting of thirteen different companies all using Morse patents, were in operation in the five states north of the Ohio River, and were

fiscation; the stock of some of the others could be bought for a few cents on the dollar, and many side lines or connecting lines had failed and their poles and wires were abandoned and allowed to go to decay.³ Only one company, that between Pittsburg and Louisville, carrying the St. Louis and New Orleans traffic to and from the East, was yielding a proper return to its stockholders.

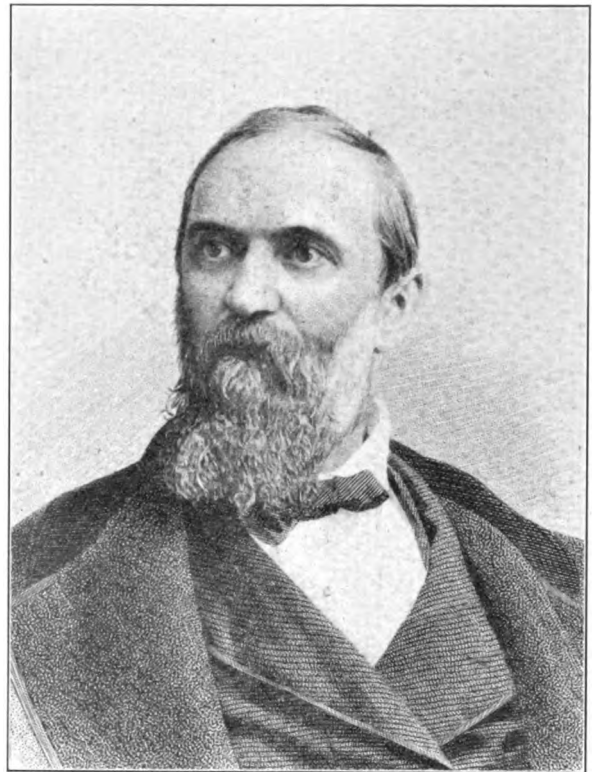
THE FIRST IMPORTANT EXTENSION.

On the other hand, the resolute energy of the New York and Mississippi Valley Printing Company had begun to make an impression. That company had succeeded in arranging for an extension of its line to Chicago by making a contract with the



JEPHTHA H. WADE

Third President of the Western Union Telegraph Company, whose term of office extended from July 26, 1865, to July 10, 1867.



WILLIAM ORTON

Fourth President of the Western Union Telegraph Company, whose term of office extended from July 10, 1867, to April 22, 1878

waging a three-cornered fight with the new company and with each other. All the disadvantages of multiplied and inharmonious management, such as contradictory rules and methods of doing business, doubling of rates when messages passed from one company to another, each company collecting its full rates, and an inefficient and unreliable service, were, of course, the inevitable results.

The conditions thus described impoverished the western companies and made it impossible for them to pay the cost of replacing the poor and badly planted poles, the three-strand iron wires, and the worthless insulation of early experimental construction. By 1854 the lines of two of the thirteen companies had been sold for debt; another company had assessed its stockholders to the point of con-

railroad companies which provided that they should build the line and take pay therefor in telegraph stock, and it had also made a contract of alliance with the purchasers of one of the bankrupt Morse

³Abstract from deposition of J. J. Speed, 1856.

The line from Cleveland to Zanesville never paid more than the expense for keeping it up and it was subsequently in part or wholly abandoned.

The line from Cincinnati to St. Louis, via Terre Haute, not paying expenses, he (the builder) let it go down and abandoned it.

I sold the patent for the line from Milwaukee to Green Bay to S. W. Hotchkiss. He built the line, worked it a short time, and abandoned it.

The line from Cleveland to Newcastle never paid enough to keep it in repair or pay for working.

The line from Wheeling to Uhrichsville was kept up a short time and abandoned for want of business.

lines. At this stage, the principal owners of some of the other companies became discouraged and resolved to sell their telegraph properties if they could do so, and invest their money more conservatively. Unable to find any other purchaser, and as a last resort, they went to Rochester and offered their interests to the New York and Mississippi Valley Company. These interests embraced all unsold Morse patent rights in seven western states, the control of one large telegraph company, a third interest in another, and full control of four smaller organizations. The principal owner of these properties refused to take in payment the stock of the New York and Mississippi Valley Company, which afterwards became very valuable, and demanded cash,* and the transaction was carried through only

and exclusive control of all patents pertaining to telegraphing, in the states of Ohio, Indiana, Illinois, Michigan, Wisconsin, Iowa and the territory of Minnesota, including connections with Pittsburg and St. Louis.

By purchases, leases and business arrangements, the said company has also the entire control of all the lines known as the Wade lines, several of those known as the Speed lines, and the Lake Erie line extending from Buffalo to Detroit and from Cleveland to Pittsburg, besides its own line connecting the cities of Buffalo, Cleveland, Columbus, Dayton, Cincinnati, Lexington, Frankfort and Louisville, which is also to be extended along the railroad from Cleveland to Chicago, through Sandusky and Toledo, and which the railroad companies have agreed to construct.

It is well known that heretofore great confusion and imperfection has existed in the telegraph lines in the West on account of which much of the business of the public has been badly done and the telegraph stock-



NORVIN GREEN

Fifth President of the Western Union Telegraph Company, whose term of office extended from April 22, 1878, to February 13, 1893.

by the issue and sale of bonds of that company. At the same time, and as a part of the same transaction, the company purchased the property and lines of the bankrupt Morse company mentioned as its first ally, and the House telegraph patents for seven states, paying for both in its stock, which was increased for that purpose.

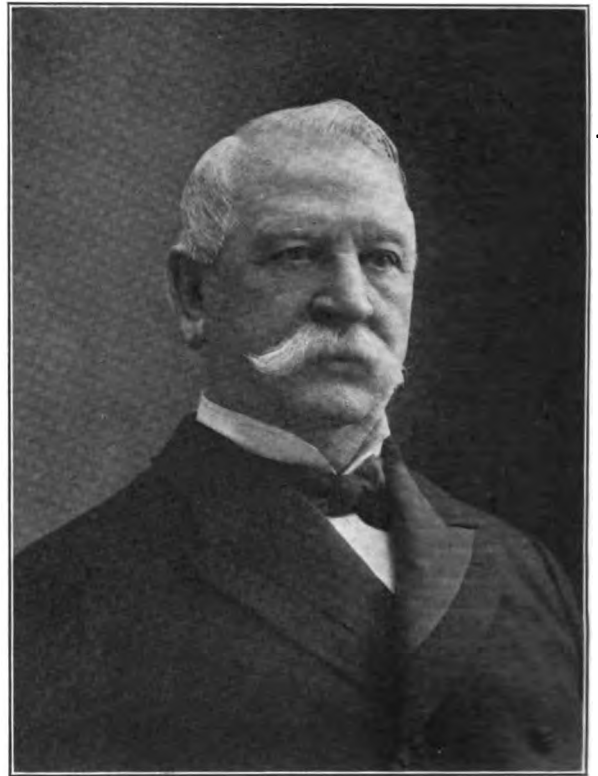
In reference to the purchases described, and immediately after their conclusion, the company issued the following circular:

TELEGRAPH CONSOLIDATION.

UNION OF HOUSE, MORSE, SPEED AND WADE LINES.

The New York and Mississippi Valley Printing Telegraph Company, by purchase, has the undisputed

*Personal narrative of J. H. Wade.



GEN. THOMAS T. ECKERT

Sixth President of the Western Union Telegraph Company, whose term of office extended from February 13, 1893, to March 12, 1902

holders have been poorly paid. This has been caused by the various and conflicting claims to the Morse patent, by questions as to its validity, by competition between the Morse and House systems, and by the short, disconnected and poorly-built lines, acting without concert and without responsibility beyond their respective limits.

The validity of these patents is now settled and this is the first time since the invention of the electric telegraph that the different patents and interests and lines in the extensive territory above-mentioned could be sufficiently got under one control to enable the proprietors to meet the wants of the public.

Since these various and perplexing misunderstandings are now at an end, it is to be hoped that the confusion heretofore prevailing in telegraph business may soon give way to harmony and the telegraph be made to answer better than ever before the purpose for which it was designed.

Railroad companies and others wishing to arrange for lines of telegraph, or the right to use the patents therefor, will address the principal agent of the company, J. H. Wade, Esq., at Columbus, Ohio, or either of the undersigned, at Rochester, N. Y.

HENRY S. POTTER, President.
JOSEPH MEDBERY, Vice-President.
FREEMAN CLARKE,
HIRAM SIBLEY,
GEORGE H. MUMFORD, Ex. Com.
SAM'L L. SELDEN,
ISAAC R. ELWOOD, Secretary.

It is impossible, in this sketch, to do full justice to the courage and foresight which inspired the operations last described. It may be well, however, to sum up the results of these efforts by stating that through a series of contracts the following advantages were secured:

1. Release from the obligation to use the House patents exclusively, and freedom to avail of the greater simplicity and economy of the Morse devices.

2. Protection from rivalry and the exclusive ownership and control of all the valid telegraph patent rights, which soon became a source of revenue through sales of licenses to railroad companies and others.

3. The opportunity to effect economies in the operation of seven different companies.

4. Entrance into Pittsburg, St. Louis and other important places.

On the other hand, the risks assumed appeared to be great, as times were very hard, and the company then, for the first time, became subject to fixed charges, not only for interest upon the bonds issued, but also for rental upon the outstanding stock of some of the acquired companies. When, to these statements, is added the further one that there was no market for the bonds, and that the directors and their friends were compelled to take them, discounting their personal notes to pay for them, it will be seen they took an heroic step and practically pledged their fortunes to the success of the venture.

NAME OF THE WESTERN UNION TELEGRAPH COMPANY.

Soon after the conclusion of the contracts described, one by one, lease by lease, by purchase, or by exchange of stock, the remaining companies in the West came into the new company's system; their imperfect lines were rebuilt according to improved standards of construction, their wires were multiplied, numerous extensions were made in all directions, the service was improved, and, in short, order and system took the place of confusion. Soon afterwards, in 1856, by act of the New York Legislature, the company's name was changed from the New York and Mississippi Valley Printing Telegraph Company, to the shorter and more popular title of "Western Union Telegraph Company," indicating the union of the western lines into one compact system.

The work of rebuilding and improving the old lines thus acquired and of making new extensions consumed all of the earnings for the next few years, but the directors held together loyally in a fixed

purpose to build up the property and make it valuable. Notwithstanding these efforts, it was nearly seven years after the organization was completed before the stockholders received any return from their investments. In December, 1857, the company paid its first dividend.

The early growth of the company has thus far been described at some length, because, in the period covered, were laid the foundations of its ultimate success. For the next four years its operations were mainly confined to construction along the fast-increasing railroads and elsewhere in its territory, and to extensions into Missouri and Kansas. During these four years, and even prior thereto, consolidations, similar to those described, had been going on in other sections, and the telegraph interests of the country had gradually merged into six systems working together in friendly alliance. These systems were substantially as follows:

1. The American Telegraph Company, covering the Atlantic and some of the Gulf States;
2. The Western Union Telegraph Company, covering the states north of the Ohio River, and parts of Iowa, Minnesota, Missouri and Kansas;
3. The New York, Albany and Buffalo Electro-Magnetic Telegraph Company, covering New York State;
4. The Atlantic and Ohio Telegraph Company, covering Pennsylvania;
5. The Illinois and Mississippi Telegraph Company, covering parts of Illinois, Iowa and Missouri;
6. The New Orleans and Ohio Telegraph Company, covering the southern Mississippi valley and the Southwest.

In addition to these six companies, sundry companies had sprung into existence on the Pacific Coast, and many other small companies, operated in alliance with the six companies in their respective territories.

THE EXTENSION TO THE PACIFIC.

The next important extension was made in 1861. For several years there had been a growing demand for the construction of a line across the western plains to connect the eastern system of lines with those of the Pacific Coast. A quicker method of communication than that furnished by mails by the way of the Isthmus of Panama was not only a necessity to the general government in dealing with its Pacific stations, but it was also urgently required by the commercial interests in both sections. The difficulties in the way of a telegraph line were regarded by many as almost insuperable. It was alleged, for instance, that the Indians would tear down the wires as fast as they were put up, or that the poles would be swept away by the irresistible movements of the immense herds of buffalo then roaming over the plains. To men not swayed by speculative considerations such as these, other serious, practical obstacles presented themselves. Among these were such difficulties as those of procuring and transporting poles and of repairing the lines when

injured; while not the least of the uncertainties was the amount of business to be depended upon after the line was up. It was therefore not believed that the line could be built, or afterward maintained, without substantial aid from the Government, and when Congress pared down the appropriation to \$40,000 per year, for the preferential use of the line, and limited it to ten years' duration, the disappointment of the telegraph companies was very great. To such an extent was this the case that, at the convention of the six companies, held in August, 1860, the delegates voted that the act passed by Congress was "so objectionable in principle and detail that this convention declines to recommend its adoption by the associated companies forming the North American Telegraph Confederation." The Western Union delegates to the convention, however, took a different view, and wanted to have the Pacific line built. They accordingly offered and carried through a resolution providing that nothing in the preceding resolution was to be so construed as to prohibit any company, either alone or in conjunction with others, from bidding for the work. When the bids were opened, the Western Union Company, represented by Hiram Sibley, was found to be the only bidder and to Sibley the contract was therefore awarded. As a preliminary to its work the Western Union acquired from C. M. Stebbins and others a majority of the stock of the Missouri and Western Telegraph Company, and the St. Louis and Missouri River Telegraph Company, of which last-named company Robert C. Clowry, now president and general manager of the Western Union Telegraph Company, was superintendent and secretary. For the purpose of building the eastern section of the line the Pacific Telegraph Company was at once organized. It engaged a great number of ox teams to transport material over the plains; it contracted with Brigham Young, of Salt Lake City, for poles and labor, and it sent a representative to California who arranged for and effected a consolidation of the California companies, which were to build the western section. Notwithstanding the discouragements arising from the refusal of many to participate in the work by taking stock in the new enterprise, the Pacific Company and the California Company pushed the work with such vigor that the line was completed on March 15, 1861, a little over four months from the time it was begun, and in time to be of incalculable service to the Government at Washington and to the general public during the Civil War.

FINAL CONSOLIDATION OF ALL THE PRINCIPAL COMPANIES INTO THE WESTERN UNION TELEGRAPH COMPANY.

During the period covered by these transactions, and as a result of the extensions and improvements mentioned, as well as of the growth in population, the business of the company rapidly increased. No records have been preserved of the revenues for the first two years (1852-1853), but the gross revenues for the next year (1854) were \$72,755. In nine

years from that time, that is, in 1863, the revenues had increased thirteen-fold. This increase made an outlet to the eastern seaboard cities, which should be entirely under the control of the company, an obvious necessity and a matter of vital importance. To secure this end the company acquired, by purchase and by exchange of stock, the lines of the New York, Albany and Buffalo and the Atlantic and Ohio Telegraph companies, which gave it the desired entrance into both New York City and Philadelphia and full control of the intervening territory. In like manner were also acquired the lines of the Pacific Telegraph Company and the lines of the California State Telegraph Company. After these consolidations had been effected the lines owned by or under the control of the Western Union Company extended from New York City to the Pacific Coast, covering substantially all the territory west of New York City and north of the Ohio River and Fort Smith, Ark., and Santa Fe, New Mexico. The remainder of the United States was assigned to the American Telegraph Company, which, by similar methods, had acquired the lines of the New Orleans and Ohio (or Southwestern) and other companies.

In opposition to these two great combinations, and coincident with the expiration of the Morse patents, there had sprung into existence a number of organizations, which, in 1864, were combined under the name of the United States Telegraph Company. The advantages possessed by one company under one management over two companies, one of them managed at Rochester, and one at New York City, were too apparent to be ignored, and, as in previous instances where similar conditions had obtained, they led inevitably to the consolidation, which took place in 1866, and which was concluded by an exchange of Western Union stock for the stock of the two other organizations.

Thus, in fifteen years from its organization, the Western Union Company rose from the position of a local company controlling about 550 miles of wire to that of a national system controlling over 75,000 miles of wire. Although much of this growth was the result of the acquisition of other companies, much also resulted from extensions made by the company itself. Such were the conditions shown by the first annual report, published in October previous to the consolidations of 1866. That report states that 8,593 miles of wire had been purchased and put into use during the preceding sixteen months, while a much smaller amount, namely, 3,800 miles, had been acquired during the same time by consolidation. Similar conditions are shown by an analysis of the property after the consolidations of 1866, which gathered in the American and United States systems and brought the consolidated company's wire up to 75,000 miles, but even of this amount nearly two-thirds had belonged to the Western Union before the consolidation.

Of the properties which have been mentioned as having been acquired, some were very profitable, others were not immediately so, but all acquisitions and extensions were of benefit to the public, and

they were essential to the improvement of the service and made possible reductions in rates on a scale which could hardly have been carried out under the old conditions. How great such reductions have been may be seen by an examination of the following table.

Comparative statement of rates for ten words from New York City and from Chicago to the principal cities of the United States:

	From New York City.		From Chicago.	
	1865.	1906.	1865.	1906.
Atlanta, Ga.	\$3.25	.50	\$2.10	.40
Boston, Mass. ....	.65	.25	2.20	.50
Chicago, Ill.	2.05	.40		
Columbus, Ohio	2.90	.40	1.20	.25
Concord, N. H.	1.00	.25	2.20	.50
Denver, Colo.	7.00	.75	5.55	.60
Galveston, Texas....	5.50	.75	3.25	.75
Hartford, Ct. ....	.50	.25	2.10	.50
Jackson, Miss.....	3.05	.50	2.25	.50
Little Rock, Ark....	4.00	.50	1.95	.50
Memphis, Tenn.	2.85	.40	1.65	.40
Minneapolis, Minn...	3.40	.50	1.50	.25
New Orleans, La....	3.25	.60	2.70	.50
New York, N. Y.			2.05	.40
Omaha, Neb.	4.45	.50	3.55	.35
Portland, Me. ....	.90	.25	2.35	.50
Portland, Ore.	10.20	1.00	8.05	.75
Richmond, Va.	2.05	.35	2.25	.50
St. Louis, Mo.	2.55	.40	1.00	.25
San Francisco, Cal..	7.45	1.00	5.00	.75
Santa Fe, N. M....	10.50	.75	9.05	.75
Tallahassee, Fla.	3.50	.60	2.85	.60
Topeka, Kan.	3.75	.60	1.75	.40
Washington, D. C....	.75	.25	1.80	.40

The policy which inspired most of the reductions shown was set forth in the annual reports from time to time as follows:

"The adoption of the new system will make an average reduction of the present rates of about fifteen per cent. These reductions do not result from competition, but are made in spite of it." Annual Report, 1869.

"During the past year two important modifications have been made in the tariffs." (These modifications were both extensive reductions.) Annual Report, 1873.

"It continues to be the policy of the Company to make conservative reductions of rates." Annual Report, 1884.

"No rates have been increased, and all changes in tariff rates have been in the line of reduction." Annual Report, 1891.

After the consolidations of 1866, the general office was moved from Rochester to New York City, and the Rochester directors withdrew, one by one, from the management, which thus passed into new hands.

The commanding position reached by the Western Union in 1866 has been steadily maintained, and its later as well as its earlier history is a record of continual growth. The 75,000 miles of wire which represented the plant in 1866 have been multiplied fifteen-fold to over one million miles; yet this statement represents only a part of the company's development. The whole plant, including poles, wires, cross-arms, and insulators, has, of necessity, been reconstructed several times according to the newest and most improved standards, and similarly the most modern and efficient batteries, office machinery and appliances have been put in the place of the earlier and cruder forms. Large and substantial poles have replaced the slender ones first put up, glass insulators screwed fast to steel pins

have replaced the smooth glass cemented on wooden pins, as well as the mixed and experimental insulation of the early days, and copper wire, of great conductivity and endurance, is fast replacing the perishable iron wire. In many of the principal cities, and at great cost, the wires have been laid underground.

In the batteries which furnish the motive power for the operation of the lines, equal improvements have been made, and dynamo and storage batteries have, to a large extent, been substituted for chemical batteries. The latter, besides being less effective than the new batteries, were maintained only at great expense for space and care, as they consisted of hundreds and often of thousands of heavy and expensive jars of constantly deteriorating acids and metals.

The instruments and apparatus employed for handling and forwarding messages represent many and great advances, the first of which was brought about by the evolution of Morse's invention into the simple and practical sounder, which has displaced alike the Morse recorder and the beautiful printing instrument which the company introduced into the West. The Morse operator no longer translates and slowly copies from a long slip of recorder paper, but, reading entirely by the sound of the instrument, he writes or typewrites the message simultaneously with its reception over the wire, and by this improved method greatly diminishes the liability to error and delay.

Duplex telegraphy was the next great step. The duplex was invented in 1871-2 by the president of another company,* who, failing in his efforts to sell his invention to his own company, found a purchaser in the Western Union. By this system two messages are sent over the same wire at the same time, one in each direction.

It was soon seen that the principle upon which the duplex was founded admitted of extension, and arrangements were made with Thomas A. Edison to develop any latent possibilities in that direction. Mr. Edison effectually demonstrated the correctness of the view indicated by producing the "Quadruplex," by which four messages are sent over the same wire at the same time, two in one direction and two in the other. Thousands of the wires are now duplexed or quadruplexed by means of one or the other of these two devices, and an immense mileage of "phantom," but nevertheless practicable, circuits has thus been created without cost, except for the additional instruments required.

The latest important advance in the operating department is the adoption of the Barclay printing telegraph system, the invention of John C. Barclay, assistant general manager and electrical engineer of the company, which prints received messages on a typewriter.

This invention is the most important that has been made in the field of practical telegraphy. Four Chicago circuits and one Buffalo circuit have been equipped with the system, and other

* Franklin Telegraph Company.

important wires are to be installed as rapidly as apparatus can be supplied. The bulk of the Chicago-New York business is being exchanged by this system. Many minor inventions and improvements can not be mentioned for want of space. Altogether they represent the best that human ingenuity has supplied to aid the telegraph in its work, and embody the achievements of Morse, House, Stearns, Phelps, Edison, Barclay and many others. Further, and perhaps as great, advances may be expected in the future, as many ingenious minds are now engaged in this great field, and their creations, when reduced to practical efficiency, can not fail to be welcomed and employed.

In opposing, in 1845, the bill for the extension of the Government line, one of the members of Congress* said that he had rejoiced at the invention of the telegraph and hoped to see it extended to all the principal cities of the United States, but he "wanted it to be called for by the commerce of the country and to pay its own expenses." So the telegraph has

*Thos. H. Benton, U. S. Senator, February 28, 1845.

been extended through corporate agency in compliance with the demands of the people to every place in the United States that has commerce enough to justify it. This has been done, not only without creating a tax upon the non-users of the telegraph, but in such a manner as to return interest to the owners of the property. For that reason the stock of the company has become a standard and popular investment, and more than ten thousand persons comprise the list of its owners.

Such, as indicated in this story, were some of the steps by which the telegraph was extended until the "blue sign" may be seen in nearly every village in the land; such were some of the measures by which value and stability were given to the property, and at the same time, an important industry, scarcely thought of sixty years ago, created and developed, until now it employs more than thirty thousand persons.

The following table shows the expansion of the telegraph service as exemplified in the exhibit of the Western Union Telegraph Company's business during the past fifty years.

THE WESTERN UNION TELEGRAPH COMPANY

Mileage of Lines Operated, Number of Offices, Number of Messages Sent, Receipts, Expenses, Etc., for Each Year since 1866.

Year.	Miles of Poles and Cables.	Miles of Wire.	Offices.	Messages.	Receipts.	Expenses.	Net Revenue.	Average Tolls per Message.	Average Cost to Co. per Message.
1866....	37,380	75,686	2,250	.....				.....	....
1867....	46,270	85,291	2,565	5,879,282	\$6,568,925.36	\$3,944,005.63	\$2,624,919.73	104.7	63.4
1868....	50,183	97,594	3,219	6,404,595	7,004,560.19	4,362,849.32	2,641,710.87	89.3	54.2
1869....	52,099	104,584	3,607	7,934,933	7,316,918.30	4,568,116.85	2,748,801.45	75.5	51.2
1870....	54,109	112,191	3,972	9,157,646	7,138,737.96	4,910,772.42	2,227,965.54	69.5	45.7
1871....	56,032	121,151	4,606	10,646,077	7,637,448.85	5,104,787.19	2,532,661.66	66.2	43.8
1872....	62,033	137,190	5,237	12,444,499	8,457,095.77	5,666,863.16	2,790,232.61	62.5	43.4
1873....	65,757	154,472	5,710	14,456,832	9,333,018.51	6,575,055.82	2,757,962.69	54.9	39.5
1874....	71,585	175,735	6,188	16,329,256	9,262,653.98	6,755,733.83	2,506,920.15	54.9	35.2
1875....	72,833	179,496	6,565	17,153,710	9,564,574.60	6,335,414.77	3,229,157.83	50.9	33.5
1876....	73,532	183,832	7,072	18,729,567	10,034,983.66	6,635,473.69	3,399,509.97	43.6	29.8
1877....	76,955	194,323	7,500	21,158,941	9,812,352.61	6,672,224.94	3,140,127.67	38.9	25.9
1878....	81,002	206,202	8,014	23,918,894	9,861,355.23	6,309,812.53	3,551,542.70	38.6	25.2
1879....	82,987	211,566	8,534	25,070,106	10,960,640.46	6,160,200.37	4,800,440.09	38.5	25.4
1880....	85,645	233,534	9,077	29,215,509	12,782,894.53	6,948,956.74	5,833,937.79	38.4	25.6
1881....	110,340	327,171	10,737	32,500,000	14,393,543.85	8,485,264.13	5,908,279.72	38.2	25.8
1882....	131,060	374,368	12,068	38,842,247	17,114,165.92	9,996,095.92	7,118,070.00	38.1	26.1
1883....	144,294	432,726	12,917	41,181,177	19,454,902.98	11,794,553.40	7,660,349.58	36.5	25.2
1884....	145,037	450,571	13,761	42,076,226	19,632,939.60	13,022,503.90	6,610,435.70	32.1	24.9
1885....	147,500	462,283	14,184	42,096,583	17,706,833.71	12,005,909.58	5,700,924.13	31.3	23.4
1886....	151,832	489,607	15,142	43,289,807	16,298,638.55	12,378,783.42	3,919,855.13	30.4	23.1
1887....	156,814	524,641	15,658	47,394,530	17,191,909.95	13,154,628.54	4,037,281.41	31.2	23.2
1888....	171,375	616,248	17,241	51,463,955	19,711,164.12	14,640,592.18	5,070,571.94	31.2	22.4
1889....	178,754	647,697	18,470	54,108,326	20,783,194.07	14,565,152.61	6,218,041.46	32.4	22.7
1890....	183,917	678,997	19,382	55,878,762	22,387,028.91	15,074,303.81	7,312,725.10	32.5	23.2
1891....	187,981	715,591	20,098	59,148,343	23,034,326.59	16,428,741.84	6,605,584.75	31.6	22.3
1892....	189,576	739,105	20,700	62,387,298	23,706,404.72	16,307,857.10	7,398,547.62	31.2	22.7
1893....	189,936	769,201	21,078	66,591,858	24,978,442.96	17,482,405.68	7,496,037.28	30.9	24.1
1894....	190,303	790,792	21,166	58,632,237	21,852,655.09	16,060,170.21	5,792,484.88	30.5	24.3
1895....	189,714	802,651	21,360	58,307,315	22,218,019.18	16,076,629.97	6,141,389.21	30.1	24.7
1896....	189,918	826,929	21,725	58,760,444	22,612,736.28	16,714,756.10	5,897,980.18	30.8	25.1
1897....	190,614	841,002	21,769	58,151,684	24,758,569.55	16,906,656.03	5,732,203.13	30.8	25.1
1898....	189,847	874,420	22,210	62,173,749	23,915,732.78	17,825,581.52	6,090,151.26	30.7	24.7
1899....	189,856	904,633	22,285	61,398,157	23,954,312.05	18,085,579.19	5,868,732.86	30.8	25.1
1900....	192,705	933,153	22,900	63,167,783	24,638,859.55	18,593,205.87	6,165,363.68	31.4	25.6
1901....	193,589	972,766	23,238	65,657,049	26,354,150.85	19,668,902.68	6,685,248.17	31.7	26.1
1902....	196,115	1,029,984	23,567	69,374,883	28,073,095.10	20,780,766.21	7,292,328.89	31.6	27.3
1903....	196,517	1,089,212	23,120	*69,790,866	29,167,686.80	20,953,215.07	8,214,471.73		
1904....	199,350	1,155,405	23,458	*67,903,973	29,249,390.44	21,361,915.46	7,887,474.98		
1905....	200,224	1,184,557	23,814	*67,477,320	29,933,635.04	21,845,570.32	7,188,064.72		

*Not including messages sent over leased wires or under railroad contracts.

Dinner to Charles Shirley.

Charles Shirley, for many years manager of the operating department of the Postal Telegraph-Cable Company, New York, was given a complimentary dinner at the Hotel St. George, Brooklyn, on Saturday evening, March 3, tendered by his friends in the Postal company in honor of Mr. Shirley's promotion to the position of superintendent of the Metropolitan district. It was a most delightful affair, an occasion probably without equal in kind in the annals of telegraphy. As a testimonial of respect and esteem nothing could have been finer. The dinner was emphatically what may be termed a family reunion, for only those connected with the Postal company were present. Of these, two hundred and eighty assembled, including numerous officials, employees of the operating room, both ladies and gentlemen, chiefs, branch office managers and others, a representative Postal gathering in the best sense. The dinner was served at half past seven o'clock. The menu card, a four-leaf folder, bore the emblem "73," and was further embellished by a fine picture of Mr. Shirley. At the close of the repast, Mr. Thomas E. Fleming, who acted as toastmaster, after some preliminary remarks, announced the first toast: "The Postal Telegraph-Cable Company—Clarence H. Mackay, President," which was drunk standing.

The first speaker was Wilbur Eastlake, who spoke on "187," that being the number on Broadway of the former and first main office of the company. As may be imagined, his theme was largely that of retrospect. Mr. Joseph F. Ahearn spoke on "253," the present home of the company, and his remarks had more of a modern flavor. The subject of "The Branches" was discussed by John Costelloe, and Daniel L. Russell responded to the "Press and Broker Service." Miss E. T. McGuire was very felicitious in speaking for her associates, "The Lady Operators." Mr. Fleming, the toastmaster, next made "A Few Remarks," and after that it only remained for Mr. Shirley to speak regarding "Himself." He was characteristically modest and brief in what he had to say, and received an ovation from those present which gave evidence of an amount of sympathy and affection for the individual seldom witnessed.

Mr. William H. Baker, who was one of the speakers, expressed his personal pleasure at being present, his remarks being listened to with close attention. He said that the sentiment prevailing at this dinner, the hearty good wishes expressed, and the pledges of loyal support of Mr. Shirley in his new position was in itself sufficient reward for those responsible for his selection. Mr. Baker declared that the Postal always endeavored to make promotion from among its own men and that therefore every ambitious employee should strive to fit himself or herself for higher positions, so that he or she may be ready to take advantage of opportunities that may offer either in or out of the telegraph service.

Mr. Fleming in his remarks said, that judging from the previous speakers, Mr. Shirley was possessed of all the virtues not having one single, decent, respectable vice to take with him into his new chair. He then went on to say why it was that Mr. Shirley was so popular, stating that in his opinion the qualities for a manager of a large operating department were fairness to all employees, willingness to hear both sides of any complaint, loyalty to his staff as well as to his employers, and at all times stimulating his staff to an ambition for better work. In closing he said that all present would agree that the guest had the characteristics which he wished inculcated in every member of his staff, that of obedience, submission, discipline and courage, which Samuel Smiles said are the characteristics which make a man.

Interspersed throughout the speeches there was an interesting musical programme given by solo singers, together with the recitations of a humorist.

Among those present were: Charles Shirley, the guest of the evening; William H. Baker, vice-president and general manager of the company; George H. Usher, superintendent; Theo. L. Cuyler, Jr., assistant treasurer; Thomas E. Fleming, special agent; Edward Reynolds, auditor; John Costelloe, superintendent of the commercial news department; E. S. Butterfield, cashier; F. F. Norton, manager of the main office; D. F. Mallon, assistant night manager; F. E. McKiernan, chief operator; A. E. Chandler, superintendent of the district service; F. E. d'Humy, division electrician; J. F. Needham, district electrician, and more than two hundred and fifty others, including about sixty ladies, members of the Postal force, and wives of some of those present.

Many letters and telegrams of regret were received from a number who were prevented from attending by the inclemency of the weather.

Old Time Telegraphers of the Northwest.

Progress seems to be making in the project of organizing in the Far West a telegraphers' society, to be known as "The Old Time Telegraphers of the Pacific Northwest." The movement appears to have its headquarters at Spokane, Wash., where a recent banquet was held in furtherance of the undertaking, which was attended by about seventy-five telegraphers, commercial and railroad. A larger meeting will soon be held at Spokane to further advance the idea, and representative telegraphers from all parts of the Pacific northwest, from Helena, Butte, Salt Lake, Portland, Seattle, Tacoma and other cities will be present and endeavor to permanently bring about the organization named. The following committee was appointed at Spokane for the purpose of arranging for this meeting and the organization: Colonel W. H. Plummer, Thomas P. McKinney, Al. W. Neimeyer, A. D. Campbell, F. E. Michaels and D. Fletcher.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

BOSTON, WESTERN UNION.

A number of improvements have been made in the city branches during the past year, the latest being the removal of the office in the woolen district. The old office at A street was found quite inadequate for the amount of traffic handled and it was moved to 263 Summer street to new and elegant quarters. The office is fitted with new furnishings of quartered oak and cherry. A new switchboard was also installed and a New York wire and extra city loops added to the facilities. The office is in charge of Miss Redfern with Mr. Furtardo as assistant. This office is without doubt one of the finest in point of furnishings in the city.

Miss Murray, of the cashier's department, has been transferred to the Old State House office, vice B. F. Terry, who goes to the main office.

James Shannon, one of our solicitors, had a son born to him on the day of the Longworth-Roosevelt wedding. It has been named Nicholas Longworth Shannon.

Chief Operator Capt. Thomas F. Clark, post-commander-in-chief of the National Legion of Spanish War Veterans, attended a convention of the order held at New Bedford, February 22-23, and was shown the sights by Manager Lewis, of that city.

Miss Keane has been promoted from the assorting desk to the position of operator; Hiram Jones, check boy, likewise becomes an operator.

James Carney, from New York, is a recent appointee.

Fred Dixon has resigned to go with The Associated Press; also M. J. Bell, who goes to Bangor.

CHICAGO, WESTERN UNION.

On February 10, a delightful surprise party was given Assistant Chief Operator C. H. Finley. He was presented with a beautiful cut glass bottle and tumblers, for which he made a pleasant little speech of thanks. Those present were: Mrs. Paddock, Mr. Edward Wells, Miss May Gallagher, Frank Donaldson, Mr. and Mrs. E. G. Scheckler, Mr. and Mrs. Benjamin P. Well, Dr. and Mrs. Cunningham, Mr. and Mrs. Edward T. Ames, Mrs. Ida Palmer, Mr. James E. Bell, Mr. Patch, Mrs. Pollock, Misses Harriet and

Elizabeth Pretzel, Miss Odea, Mr. John Dayhoff, Mr. Frank Crittenton, and Mr. Theron T. Childs.

Operator Eller, an old-timer, formerly of the Milwaukee Board of Trade office, is a recent arrival.

The operating staff are pleased and gratified to hear that Edward Hearn, formerly an operator here, has recently been appointed traffic chief in the Postal main office, this city.

PHILADELPHIA, WESTERN UNION.

The branch office, 100 South Tenth street, has been moved to the north side of Chestnut street, near Tenth street. The change is most gratifying to Manager Harry Hehl, who is said to have the finest and most up-to-date branch office in the city.

The building at Tenth and Chestnut streets, where this company had its main office for many years, is to be torn down and a more modern building erected in its place.

H. I. Powell and A. W. Lerne have left us and gone to New York, while J. G. Stanley has also resigned, to go to Newark, N. J.

Great preparations are under way for the annual progressive euchre, banquet and ball which the Aid Society will give on April 8. It gives promise of eclipsing by far all of their former affairs.

Harry Given, a well-known operator, now in business at Stealton, Pa., paid us his respects recently.

NEW YORK.

WESTERN UNION TELEGRAPH COMPANY

EXECUTIVE OFFICES.

Another daughter has been born to Mr. George J. Gould, a vice-president of the company. Mr. Gould's children now number four daughters and three sons.

Mr. G. H. Fearons, general attorney of the company, who, accompanied by his wife, went to Hot Springs, Va., a short time ago, for a brief vacation, is back again at his desk, much refreshed by the trip.

Mr. A. E. Sink, formerly manager of the operating department, has been appointed to a position in the executive offices of the company.

The office at Jamestown, N. Y., having had the necessary apparatus installed, will hereafter be a repeating station between New York and Chicago.

Of the forty-eight annual and semi-annual tariff books issued up to the present time by the company, Mr. William Holmes, the superintendent of tariffs, has produced forty-seven of the number.

Mr. C. F. Ames, superintendent at Boston, Mass., was a recent visitor. Mrs. Ames accompanied her husband.

The headquarters of superintendent E. M. Mulford will be removed from the seventh to the third floor of the building within a few days. A

house-warming to celebrate the occasion will take place on Saturday, March 17.

Mr. S. H. Strudwick of the cable station at North Sydney, Nova Scotia, is in the city on a visit.

IN THE OPERATING DEPARTMENT

Mr. Robert Morton of the quadruplex department is acting chief clerk to chief operator, T. A. McCammon.

Mrs. C. M. Cunningham of the Commercial News department, one of the best lady telegraph operators in the country, has recently undergone a successful operation for appendicitis.

Civic Lodge, F. and A. M., of which Mr. E. C. Watkins of the general operating department is the master, gave its first annual entertainment and ball at the Harlem Casino on Thursday evening, March 1. About 2,000 people were present, including many of the Masons from this office, and the affair was a most pronounced success, socially and financially.

Mr. C. H. Lawrence, of the quadruplex department, nights, has been appointed Southern traffic chief, nights, vice Mr. C. H. S. Small, deceased.

Mr. L. D. Grace has been assigned to the quadruplex department, nights.

Miss Nellie Turner has resumed duty in the Eastern division, after an absence of several months in a branch office.

Benjamin F. Cogger, formerly of the quadruplex department, and a well-known old-time telegrapher, died at his late residence, at Roseville, N. J., on March 1.

Miss Wiley, late of the Boston main office, and Miss Robertson from Glen Cove, L.I., are registered among the new arrivals, and have been assigned to the Eastern division.

"Senator" W. L. Ives, the dean of the Eastern division, who has been ill, has just returned after a few weeks' stay in Syracuse. The trip up-State has done the Senator a lot of good, and he hopes to resume active duty shortly on his regular circuit which he has worked continuously for the past twenty-three years.

Mrs. W. T. Rogers, nee Miss May Enright, formerly of this department, wife of Southwestern Wire Chief Rogers, died at her late residence in Brooklyn on March 7. A large number of friends from this office attended the funeral.

Mr. W. B. Purcell, Western traffic chief and recording secretary of the aid society, is rapidly convalescing from his recent illness.

The sympathy of many friends is extended to Mr. J. J. Phelan, of the telegraph department of the United States Steel Co., in the death of his wife, formerly Miss Maggie Lestrangle of this department.

Mr. M. F. O'Neill has been called to Baltimore to attend the funeral of his father, who died suddenly in that city.

Wednesday evening, March 7, Amaranth Council, Royal Arcanum, made up largely of members of this force, had a fishing party at Tilyou

Pond, Steeplechase, Coney Island. Mr. E. E. Brannin, Jersey traffic chief, proved the victorious angler of the evening, he having succeeded in landing four good sized codfish.

POSTAL TELEGRAPH-CABLE COMPANY.

EXECUTIVE OFFICES.

At the annual meeting of the stockholders of the Postal Telegraph-Cable Company held February 27, the following named directors were re-elected:

C. H. Mackay, W. H. Baker, E. C. Bradley, Wm. C. Van Horne, A. B. Chandler, C. R. Hosmer, G. Crocker, G. G. Ward, E. C. Platt, J. W. Ellsworth, G. Clapperton and C. C. Adams.

At the meeting of the directors held March 6, the following named officers were elected and appointed:

President, Clarence H. Mackay; vice-president and general manager, William H. Baker; second vice-president, Edgar C. Bradley; third vice-president, George G. Ward; fourth vice-president, Charles C. Adams; assistant general manager and assistant secretary, Charles P. Bruch; treasurer, Edward C. Platt; assistant treasurer, Theodore L. Cuyler, Jr.; secretary, John O. Stevens; auditor, Edward Reynolds; general counsel, William W. Cook; electrical engineer, Francis W. Jones; associate electrical engineer, John F. Skirrow; traffic manager, Minor M. Davis; superintendent of tariffs, Isaac Smith; superintendent of supplies, Walter D. Francis; superintendent complaints and claims department, John Doran; special agent, Thomas E. Fleming; superintendent leased wire department, Henry F. Hawkins; superintendent commercial news department, John Costelloe; patent attorney and expert, William B. Vansize.

Mr. Edward Reynolds, auditor of the company, has left for a business trip that will take him as far as the Pacific Coast. He is accompanied by his wife.

Colonel A. B. Chandler, chairman of the board of directors, accompanied by his wife, left the city on March 7 for a visit to Camden, S. C.

Mr. Minor M. Davis, traffic manager, has returned from his extended trip to the Pacific Coast, whither he went in the interests of the service.

Mr. J. Z. Hayes, chief operator of the company at Detroit, Mich., was a recent visitor.

Mr. E. J. Nally, general superintendent at Chicago, was a recent visitor.

IN THE OPERATING DEPARTMENT

On March 1, when Mr. F. F. Norton, our new manager, took charge of the operating department, he found a beautiful floral horseshoe on his desk, a gift contributed by the force. A card was attached to the piece expressing best wishes and success to Mr. Norton in his new official capacity.

Mr. Robert C. Murray, Jr., general wire chief, Western Union Telegraph Company, Philadelphia, together with one of his assistants, Mr. O. M. Pennypacker, paid a visit to the operating room a few days since. Although their stay was a brief one, they were very agreeably entertained by Messrs. Whalen and Mallon.

Miss L. Moss is still absent owing to illness, and has gone to Lakewood, N. J., for her health.

J. T. Ewing, formerly Western traffic chief, is now located in the electrical engineer's office, where he will be in charge of the phantoplex system.

W. W. Dier has been transferred to the 944 Broadway office.

J. Twigg has been transferred to the Fifth avenue and Forty-second street office.

T. F. McGinty has been added to the night force and H. A. Yoell to the all-night force.

George Sayres has been appointed assistant quadruplex chief.

J. Ward has been added to the service department.

J. B. Rex is again in charge of the Western traffic, days.

Miss Anna Crawford has been added to the operating force.

OTHER NEW YORK NEWS

The spring dinner of the Magnetic Club will take place at the Hotel Astor, Forty-fourth street and Broadway, on the night of April 17. The large banquet hall has been engaged for the occasion, as a large attendance is expected.

Mr. Leo Miller of the Postal Telegraph-Cable Company, at Philadelphia, Pa., who has just completed a trip around the world that has taken ten months, was a recent New York visitor.

Telephoned Telegrams.

The custom of delivering messages over the telephone does not always work out to the satisfaction of those concerned. Telegrams addressed to commercial salesmen, for instance, and sent in care of their customers, have in many cases been annoying, particularly when the messages related to business between the salesman and said customer. The telegraph companies have recently found it necessary to instruct their managers that in cases where parties authorize telegrams to be telephoned to or from them, it is necessary to secure a written order to that effect, and when a telegram is so telephoned ascertain first, who is at the receiving telephone, and after the telegram has been telephoned mark the time upon the copy, the name of the party receiving at the telephone, and also the name of the telegraph employee who telephones the message. A copy of the telegram telephoned must be subsequently delivered or mailed to the addressee, plainly marked "duplicate of telegram telephoned."

Success in life is the sublime purpose, the universally coveted goal, to the attainment of which

every man and woman bend their best energies and their most unremitting efforts.

The Boston Telegraphers Mutual Aid Society.

The Telegraphers' Mutual Aid Society of Boston held its annual meeting in that city on March 4. The reports of the several officers showed the association to be in splendid financial condition. There were two deaths during the past year and about \$600 was paid out by the association to sick members.

An election of officers resulted as follows: Thomas F. Clark, president; C. A. McManus, vice-president; William H. Sullivan, treasurer; William J. Mahoney, secretary; William J. Mangan, chairman of the relief committee, and Edward C. Donahue, sergeant-at-arms.



THOMAS F. CLARK.
President of the Telegraphers' Mutual Aid Society, Boston.

The new president, Thomas F. Clark, was formerly the treasurer of the association, and is one of its charter members. He is the chief operator of the Western Union Telegraph Company at Boston. He possesses a wide acquaintance, has attractive personal qualities, executive ability, and his selection as presiding officer of the Boston society may be regarded as a most fortunate one.

John A. McNichol, the New Postal Manager at Philadelphia.

John A. McNichol, whose appointment as manager of the Postal Telegraph-Cable Company at Philadelphia, succeeding Charles E. Bagley, promoted to be assistant superintendent at New York, as noticed in the March 1 issue of TELEGRAPH AGE, is a native of the Quaker City, where he was born May 11, 1864. He entered the telegraph business in 1876, beginning his career at twelve years of age as a district messenger boy. Subsequently he found employment with the American Rapid Telegraph Company at Washington, D. C., his term of service being but from December, 1881, to May, 1882, thence going to Pittsburg in the same interests. From Pittsburg, Mr. McNichol went to New

York, where for a period of about three years he was employed first by the American Rapid and afterwards by the Bankers' and Merchants' telegraph companies. In the spring of 1885 he again went to Washington. This time as an employee of the Western Union Telegraph Company. Soon thereafter he returned to Philadelphia, where for a while he again served the Bankers' and Merchants' company, but after its merger with the Postal, became identified with the latter, an association he has since maintained. On October 1, 1889, Mr. McNichol was appointed all-night chief, and on February 1, 1894, was made all-night manager, a position he continued to hold until advanced to the full managership of the office, as already stated. Mr. McNichol has shown himself to be a man of intelligence and capacity. He has a ready grasp of telegraphic interests and needs, and his business methods have been painstaking and thorough. To these qualities he owes his promotion.

Mr. Hesketh and the Quadruplex.

Editor of TELEGRAPH AGE:

I was much interested in reading in the AGE of February 16 the report of Electrical Engineer Hesketh, of the Queensland Postal service, and his assertion that he had only seen one quadruplex working good, and that only 250 miles long. He evidently did not pass through our town, or we could have shown him one working from here to Los Angeles, 110 miles long; another to Albuquerque, New Mexico, 401 miles, all on a 300-lb. copper wire. The length of circuit, Los Angeles to Chicago, 2,265 miles, the polar side working through direct point repeaters, the common side working together, the common side being a circuit of 1,510 miles with polar duplex north of Albuquerque to Denver, Colo. These quads are worked four-sided daily, and the signals on the common side are every bit as firm and solid as those on the polar side. As an instance, in case of emergency west, we are obliged to put the fast broker leased wire at times on the common side, 510 miles, where stock quotations are sent as rapidly as the operator can send them, without a kick of any sort from either end. That I consider a hard test for any quadruplex, the broker circuit being 1,510 miles in length (Denver to Los Angeles). They work equally well, in rain or sunshine, and we have never had to abandon the common side since this office was opened.

W. E. PEIRCE.

Ashfork, Ariz., March 3.

Protection Against High-Tension Electric Wires.

Proper protection against high-tension electric wires where they cross the telegraph wires of railroad companies is a problem recently presented the state railway department of Michigan. The Commonwealth Power Company, which gets its electricity from dams in the southern part of Michigan, is erecting a line of wires from Jackson to Lansing, and it plans to cross the Michigan

Central tracks twice, at Rives Junction and a few miles south of Lansing. The wires will carry about 40,000 volts and the railroad men have not restrained their imagination in describing what would happen should a break in the wires occur at a point where they cross the telegraph wires. Any operator on the line would be in danger of instant death, and any number of stations where the wires enter might be consumed by fire.

The railroad department acknowledges the danger in the crossing of the two sets of wires, and is considering plans that the Commonwealth Power Company has submitted for cradles to support the wires in case any break occurred. The problem is not simple from the fact that such cradles must be cumbersome and furnish opportunities for sleet and ice to pull down both wires and poles. Iron poles were suggested by the railroad companies, but to these the power company objects on the ground that they would be attractive marks for lightning. Further conferences are to be held.

The railroads object to the placing of wires underground because of the possible interference with their own electrical systems and the possible danger from connections established by moisture.

The development of great water powers in Michigan and the transmission of the current long distances is likely to make the protection from the high-tension wires a matter of legislation.

Telegraph Operators as Consumptives.

An English authority who has given the subject of consumption among telegraphers of that country serious consideration says:

"Everyone knows that the operator reads better with his ears than with his eyes. He carries out an essentially mental operation by using the nerves of hearing. This faculty is consequently highly developed in his case. In the ordinary work of reading twenty words a minute the telegraph operator must distinguish 150 alternate strokes or intervals, and when there is a rush of work this figure can go as high as 450. There is also the work of transforming the sounds into visible symbols, or writing, which implies another mental process. And whereas the normal amount of varied sensory impulses per minute is 120, the operator has to accomplish 150 to 450. Without taking extreme cases into consideration, it may be said that the sense of hearing in a telegraph operator is two and a half times more powerful than in an ordinary individual. Again, in telegraphy, the continuity of the nervous stimulation, the monotony of sounds and the fixity of attention are further causes of exhaustion. It is found also that during forced work the operator's breathing is affected, his heart's action precipitated and his brain congested.

"As a result of these phenomena it is noticed that a general decline of the organism follows, ending in tuberculosis. According to a well

known authority, the death rate among men for tuberculosis is 13.8; that of telegraph operators is 46.6, exceeding by 13.5 the mortality among moulders.

"And what is true of tuberculosis applies to other affections of the respiratory organs. The general death rate for the latter is 3.5, but it rises to 18.4 among telegraph operators between fifteen and twenty-five years of age, to 23.1 between twenty-five and thirty-five years of age, instead of 4.9, and to 12, instead of 5.3, between the ages of thirty-five and forty-five. From forty-five years and upward it declines, being 4.3, instead of 5.3; but this diminution is very delusive, seeing that it is due to the elimination of the weak members who have died off in the preceding years. It becomes more marked with increasing age. Between fifty-five and sixty it stands at 0.5, instead of 5.4, and above sixty-five at 0.4, instead of 8.2."

The Phantoplex.

The development of the Phantoplex, invented by Francis W. Jones, electrical engineer of the Postal Telegraph-Cable Company of New York, and which was described in detail in our issue of October 1, 1905, is apparently advancing at a rapid rate, and in every case the system is said to be giving highly satisfactory results. It is said there are some twenty circuits in operation in various parts of the country east of the Rocky Mountains, furnishing an aggregate of over three thousand and two hundred miles of phantom wire, and there are nearly as many more circuits covering a larger mileage of wire that are nearly ready for use.

We are informed that during the recent sleet storms in the Mississippi and Ohio valleys, and also in Virginia, that it was found possible to forward messages via the phantoplex system through the wrecked wires, when they could not be operated by the Morse system.

Mr. Jones states that while the system has far surpassed his expectations in the results that have been attained, that time alone will demonstrate the extent to which the present system of telegraph wires, including their underground, and aerial cables can have the phantoplex system successfully applied to them. But from the manner in which the phantoplex circuits that have already been put in operation are working, the outlook is extremely favorable, and must result eventually in a considerable saving in wires.

All persons who desire to secure bound volumes of TELEGRAPH AGE for the year 1905, which includes the very full and valuable index, may obtain the same for \$3 per copy, orders for which, accompanied by the cash, should be addressed to the publisher of this journal. From no other source can there be obtained so complete a history and record of events of the telegraph, the submarine cable, wireless telegraphy, telegraphic inventions, and general news and information in the

telegraphic world, at home and abroad, as is afforded in this volume. In addition to this, its articles on telegraphy, published under the general head of "Some Points on Electricity," present a series of practical studies, fully illustrated by diagrams, that every operator and student should possess.

The testimony of progressive operators is that TELEGRAPH AGE is so thoroughly comprehensive in character as to make it absolutely indispensable to those who would keep informed. Its technical articles are of high practical value. Write for a free sample copy.

Hamilton, Ont.

(Communicated.)

Hamilton is essentially an industrial centre, and along this line her growth during the past ten or twelve years has been extraordinary, in fact, so much so, as to be almost phenomenal. The year 1903 saw the establishment of the Hamilton Steel and Iron Company's blast furnace, a few years after followed the erection of their steel mill; also in the same year the completion of the Toronto, Hamilton and Buffalo Railway. In 1905 came the Westinghouse Air-brake Company. In 1902 the International Harvester Company established their branch here, while 1903 saw the organization of the Canadian Westinghouse Company, Limited, which, if not the largest, is one of the most up-to-date factories on the North American continent. The Frost Wire Fence Company established here about this time, a branch of a Cleveland firm, also the Pittsburgh Steel Company, the Canadian Steel and Wire Company, a branch of a Pittsburgh concern; the Crucible Steel Company; also the Ellis Manufacturing Company, from Pittsburg, and during the year last past the Canadian Drawn Steel Company, and the Union Drawn Steel Company, from Beaver Falls, Pa. Other concerns locating here are the Baynes Carriage Company, from Buffalo, N. Y., F. W. Bird and Son, from East Walpole, Mass., and the Otis-Fensom Elevator Works, with headquarters in New York and Chicago. These are some of the many that are coming from outside points, and nearly all of our older factories have doubled their capacity within the last year or two. Special mention may be made of Sawyer, Massey Company, the Norton Manufacturing Company, and other foundries. The Hamilton Bridge Works Company have more than trebled their capacity. In fact, Hamilton may be said to be, from an industrial point of view, in an exceedingly prosperous condition.

Centrally located is the Great North Western Telegraph office, the oldest, as well as the most popular telegraph company of Canada. The company operates nearly eleven hundred exclusive offices, and communication can be had with upwards of 49,000 places in Canada, the United States and Mexico.

The Generating and Distribution of Music by Means of Alternators.

The Cahill telharmonic system which is illustrated and described in the *Electrical World* of March 10, is declared to be, says that paper, a new-born electrical art. Dr. Thaddeus Cahill, of Holyoke, Mass., is the inventor. Mr. Cahill has given to the world a realization of one of the most fascinating among Bellamy's dreams in "Looking Backward." Beautiful music is today being produced in a dingy shop in Holyoke, from a group of alternating-current dynamos—directly produced from the dynamos, without intervention of tinkling cymbal or of sounding brass, or of twanging strings. And the music may be heard wherever a wire can be stretched. The telephone may be said to have been delivered of its first-born, for it is through a telephone that this music is hereafter to be heard—but in tones loud enough to fill the greatest auditoriums. A new field is also opened to the composer, who may deal with the familiar qualities of sound and with others never heard before. A new field likewise is opened to the performer, who may interpret with a delicacy of control never possible heretofore on any known instrument. Future Paderewskis sitting in New York may be heard in ten thousand places miles apart and in each place the original effect is heard. In each place music is produced not reproduced. Hence a new field is open to the inventor, able to provide the means by which one artist or one orchestral group is multiplied into ten thousand.

John Gavey on the English Underground Telegraph, Etc.

John Gavey, who is president of the British Institute of Electrical Engineers, and engineer-in-chief of the British telegraph system, in a recent speech before the telegraph engineers of that country stated that "the great underground line from London to Glasgow, commenced under the aegis of Sir William Preece, had been completed, and on or after April 1 they all hoped that that line would be at work from end to end. In the course of the present year they would finish an underground line from London eastward to Chatham, and would make good progress with one westward from London to Reading. They might be rather proud of this great work. There was nothing equal to it in the whole world. It was only recently that he had been approached by representatives of the great American companies, who were desirous of obtaining such information as was available on the subject. Another line of progress was, he said, the completion of the great telegraph switch for providing telegraphic inter-communication throughout the metropolitan area. It had been on the initiation of Sir John Lamb that the switch was designed, and it is one of the most up-to-date pieces of telegraphic apparatus that

had been introduced anywhere. There appears, he also went on to remark, to be little field for introducing new telegraphic inventions in America, American inventors themselves complaining that their opportunities in their own country were very limited, and that Great Britain was much more ready to give new ideas a fair trial. He observed that it had been said from time to time that a Government monopoly tended to stifle invention. He thought that this was a very good counterblast to a statement of that sort.

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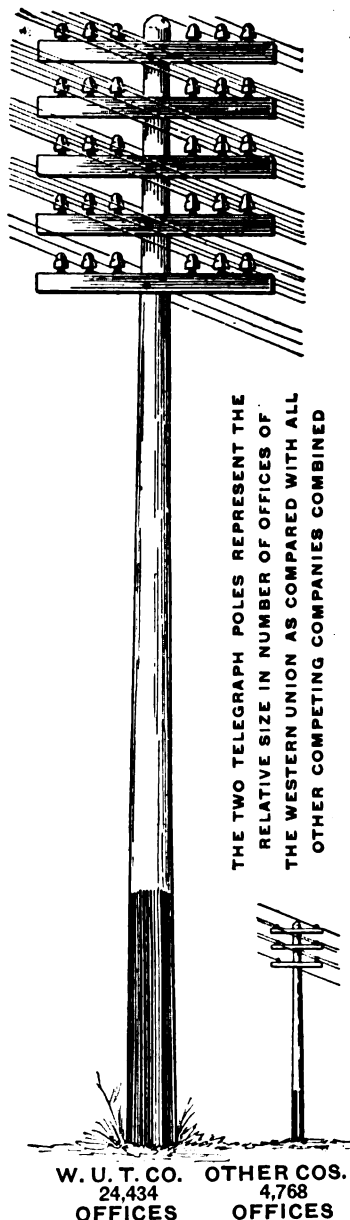
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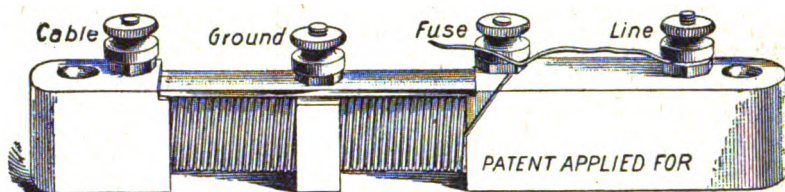
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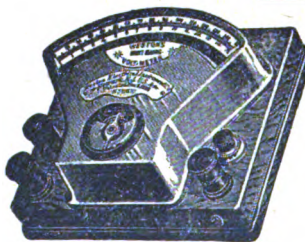
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SOME POINTS ON ELECTRICITY.

The Storage Battery.

Part II.

BY WILLIS H. JONES.

As was stated in the preceding instalment of this article, everything depends upon the proper handling of the storage battery so far as its total output is concerned. That is to say, the cells must be charged and discharged at as near their normal rate as possible in order to obtain the best results. They may be charged at a slower rate than their normal allowance with equally good results, provided the time can be afforded to do so, but a greater rate of charging will diminish the possible total output.

To make this point clear let us take for illustration a one-hundred-ampere-hour cell and charge it as its normal rate, which is ten amperes per hour for a period of ten hours. If the cell is then discharged, that is to say, current be drawn from it at the same rate, ten amperes per hour, it will in turn yield practically one hundred amperes of current continuously for ten hours. Had the cell been charged and discharged at double that rate, or twenty amperes per hour, we would probably find it exhausted after about eighty-five amperes of current had been delivered. On the other hand, if plenty of time is allowed and we charge it slowly at the rate of, say, five amperes

per hour, or just half the volume permissible for that size cell, it is possible to get as much as one hundred and twenty amperes out of it if not used up at a greater rate than that with which it was charged.

This gain or loss, respectively, in the cells' final capacity, due to different charging rates, is partly explained by the different values of energy uselessly expended by the current in heating the circuit. This heat loss is proportioned to the square of the volume of current flowing, hence to double or halve the volume of current flowing in a circuit increases or diminishes, respectively, the heat energy loss four fold.

The normal charging and discharging rate of a storage battery is usually one-tenth of its rated current capacity continued for ten hours. Thus the proper rate, both ways, for a one hundred ampere-hour cell is ten amperes per hour, while one ampere per hour constitutes the rate for a ten ampere-hour cell.

The current capacity of a storage cell is not only proportional to the superficial area of its plates, but also to the sponginess, or absorbing facilities the latter offer. Hence we see the bearing the charging rate has on its possible capacity. Like a bucket possessing a porous inner lining, it is obvious that if filled faster than the pores can absorb, the vessel will become apparently full and overflow with a smaller intake of fluid than might have been placed therein had the rate of filling been slow enough to permit the pores to store more of it away before the brim was reached. The normal, or preferred rate of charge, therefore, is represented by a medium flow of current, such as experience has demonstrated insures the best all around results under ordinary working conditions.

With the knowledge of these facts at hand the problem of selecting storage cells of proper capacity for any particular kind of work should not be in the least perplexing. Simply estimate as closely as possible the probable daily average rate per hour of current that may be required for all purposes and multiply the result by ten. Thus, if the rate or drain per hour is found to be ten amperes per hour the cell must be of one hundred ampere-hour capacity at least. A five ampere-hour rate would require a cell of fifty ampere-hour capacity, while other rate values would require cell capacities in corresponding proportions.

This rule, of course, is only strictly true from a theoretical standpoint. That is to say, it could be followed for maximum results if the estimated

drain per hour remained permanently unchanged. In practice, however, allowance must be made for future alterations in the volume of current likely to be required, due to natural growth as well as to temporary and sometimes rather extended calls during emergencies.

For this reason an ample margin in the way of cell capacity is required, to provide for which the only remedy lies in installing larger cells than would otherwise be absolutely necessary. It is always well, however, and economical, all points considered, to install storage cells having a normal discharge rate as near that of the estimated hourly current demand as possible.

In an article written by William Finn for *Telegraph Age*, published several years ago, the following interesting information concerning the construction, assembly and charging of the cell may be found:

"In setting up an accumulator cell, a certain definite number of plates are used (depending upon the capacity of the cell) of which all the peroxide plates are electrically connected together to form the positive element, and all the simple lead plates similarly arranged and connected to form the negative element. The different elements are disposed with regard to each other in the cell in much the same way as the sheets of tin foil in a condenser; that is, each positive plate is placed between two negative plates so that there is always one more of the latter than of the former: a five-plate element, for example, being composed of three positive and two negatives; an eleven-plate element of five positives and six negative plates, and so on.

"The positive plates are thus exposed on both sides to the negative surfaces, which arrangement, combined with their proximity, tends to produce an extremely low internal resistance, which is the most essential feature of an efficient accumulator.

"By a very ingenious manipulation of the solution in a cell the voltage is maintained at a nearly uniform pressure during the major portion of the period of discharge.

"A weak solution of sulphuric acid has a high resistance, which gradually diminishes as more acid is added. When, however, its specific gravity reaches a point represented by 1.215 (unity being expressed by 1.000), the liquid acquires its maximum conductivity, after which the addition of more acid increases the resistance.

"Now, instead of maintaining the density at this point of least resistance the specific gravity of the solution is allowed to increase to 1.300, which has the effect of slightly diminishing the conductivity of the solution at a time when the battery is fully charged.

"The object of this will be apparent when the fact is considered that a fully charged storage battery possesses a higher initial electromotive force than subsequently, so that as the cell discharges and its electromotive force falls the conductivity

of the acid rises and thus tends to keep the voltage at a more constant value."

(To be continued.)

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, Inc., June 1 to July 16, Inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, Inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, Inc.; The Barclay Printing Telegraph System, May 16; Polarised and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power From the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16; The Dynamo—Series, Shunt and Compound Wound, Feb. 1-16, March 1; The Storage Battery, March 16.]

Orders, if sent to *Telegraph Age*, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

Recent Telegraph Patents.

A patent, No. 399,314, for a telegraph system, has been awarded to W. Barnley, of North East, Pa.

A patent, No. 815,322, for the art of telegraphy, has been obtained by Daniel M. Therrell, of Charleston, S. C. The step in the art of the electrical transmission and reproduction of sound which consists in making the terminal transmitter circuit or circuits wholly or partially resonant for the essential frequencies to be transmitted, thereby increasing the efficiency of transformation, and the energy transferred to the secondary circuit, substantially as set forth.

A patent, No. 814,501, for a relay, has been issued to James Allen, of the United States Army. A coil is mounted for a deflective movement between the poles of a magnet, a contact tongue being mounted for movement by the coil. Contact stops for the tongue, an armature mounted for movement by the coil but independent of its magnetization, and a pair of auxiliary adjustable pole pieces, between which the armature is arranged to oscillate, complete the apparatus.

A patent, No. 814,478, for a telephone or telegraph system, has been granted to Georg Ritter, of Stuttgart, Germany. Combined with a main-line circuit and a number of sub-station instruments connected to the main-line circuit are a controlling device at each sub-station operating directly to render its sub-station instrument operative, an electric circuit including the controlling devices, mechanism at each sub-station arranged to regulate the admission of electric current to the circuit connecting the electric

devices, and to render its own disconnecting device inoperative, and means at each sub-station arranged to prevent the operation of its own controlling device.

Personal Mention.

Mr. W. S. Kelley has recently been appointed chief engineer of the Holtzer-Cabot Electric Company at Boston (Brookline), Mass.

Mr. Emmett Howard, the well-known old-time telegrapher of Memphis, Tenn., for many years manager of the Western Union Telegraph Company at that point, has gone to Archer, Fla., where he will engage in other business.

The Railroad.

A patent, No. 814,761, for a telegraphic safety device, has been issued to Selden R. Wright, of Morton, N. Y., assignor to the Circuit Protecting Relay Company, Rochester, N. Y.

The Association of Railway Telegraph Superintendents, which meets this year at Denver, Colorado, on June 20, will make the Adams Hotel its headquarters. President E. E. Torrey has added the following named gentlemen to the committee of arrangements: J. M. Walker, superintendent of telegraph of the Denver and Rio Grande Railroad, and E. E. McClintock, superintendent of telegraph of the Mountain Telegraph Company, both of Denver.

The second annual electrical night of the New York Railroad Club was held March 16 at Carnegie Hall, New York City. The meeting was called to order by President H. H. Vreeland, and a paper read by Mr. B. G. Lamme, Pittsburg, Pa., entitled "Alternating-Current Electric Systems for Heavy Railway Service." This meeting was remarkable on account of the number of railroad officials present, all of whom manifested intense interest in the subject of electrification of the steam railroad.

The pamphlet, entitled "Advance Notice No. 2," of the Railway Signal Association, has made its appearance. The full text of the constitution as revised during the current year is given; also the several papers that were read and discussed at the regular meeting of the association, which was held at the Great Northern Hotel, Chicago, March 19, as mentioned elsewhere. The pamphlet also gives a record of the New York meeting, including the verbatim discussion of the several papers which were read on that occasion. These proceedings are issued under the direction of H. S. Balliet, the secretary of the association, Grand Central Station, New York.

The cause of the recent wreck on the Denver and Rio Grande Railroad, by which twenty-three lives were lost, is explained by the fact that the telegraph operator at fault had undoubtedly been asleep and did not hear the train go by. He O. K.'d the despatcher's order and is held by the company as the sole cause of the collision.

He was the day operator and was doing duty for the night operator as the latter had gone to Pueblo to cash pay checks without asking permission from the Pueblo office. The company's standing rule is that day operators are not to relieve night operators and work overtime unless permission is asked and granted by the chief despatcher.

RAILWAY SIGNAL ASSOCIATION.

The Railway Signal Association held its regular March meeting at the Great Northern Hotel, Chicago, March 19. Vice-President J. A. Peabody, of the Chicago and North-Western Railway, presided. H. S. Balliet, of New York, secretary, was also present. About seventy-five persons were in attendance at the two sessions, and forty new members were elected. The revised constitution, as published in the notice of the meeting, was discussed, and a number of changes made. It was recommended that with these corrections it be presented at the New York meeting in May for adoption. At the second session the following papers were read and discussed: "Charging of Storage Batteries from Alternating-current Circuits," by F. B. Corey, of the General Electric Company; "Substituting Track Circuits for Detector Bars," by W. N. Spangler, supervisor of signals of the West Jersey and Seashore Railroad, and "The Power Distant Signal," by W. A. D. Short, signal engineer of the Illinois Central Railroad.

Mr. Corey in his paper upon the charging of storage batteries described the mercury arc rectifier, beginning with a general description of the mercury vapor arc lamp aside from its special application to the rectifier.

In order to show exactly what transpires in the rectifier tube, Mr. Corey introduced a series of oscillograph records, which gave accurate measures of the instantaneous values of currents and electromotive force in the various circuits. One of these curves showed the variation of current at the two anodes simultaneously. It was interesting to note that the current as shown in the curve was very far from its original sine curve, this distortion being the result of the reactances. The anode curves overlapped by an angle of approximately twenty degrees. Another illustration showed two simultaneous records, the lower curve being the impressed electromotive force and the upper curve the direct current flowing from one cathode shown in its relation to the zero line. In this case the indentation of the current curve was approximately thirty per cent. of its maximum ordinate. If for any reason it is desirable to further reduce the amplitude of these pulsations it may be readily accomplished by means of special reactances and without any great loss in efficiency of the rectifier.

Another curve showed the voltage in charge and discharge of one reactance coil and its relation to the impressed electromotive force, while still another showed the voltage between one anode and

the cathode and its relation to the impressed electromotive force. This latter figure also showed the constant voltage drop of fourteen volts, while the arc is maintained. The length of time that the arc is held after the impressed electromotive force has reached the zero value was also shown by a curve.

The Cable.

Mr. George G. Ward, of New York, vice-president and general manager of the Commercial Cable Company, New York, accompanied by his wife, arrived at Colombo, Ceylon, on March 24, en route to China and Japan.

Speaker Cannon, of the House of Representatives, has received a letter from Secretary Root urging that the bill appropriating \$77,712 to reimburse the French Cable Company for losses sustained by the cutting of its cables in Cuba in the Spanish-American war, be passed. Mr. Root says the claim is just and should be allowed at this session.

The converted cable steamer, "Urmston Grange," of London, Eng., arrived at Guam, March 26, having on board the Commercial Pacific Cable Company's cable to be laid between Guam and Japan, a distance approximating 1,500 miles. The shore end was laid on March 28, and the work of paying out began on March 30. The laying of the cable, if all goes well, should be completed in eight days.

Cables remaining interrupted March 28 were those of Port Arthur-Chefoo, interrupted March, 1904; Cadiz-Teneriffe, interrupted July 20, 1905; St. Jacques-Haiphong, interrupted February 14, 1906; Tangier-Cadiz, interrupted February 18, 1906; Jamaica-Colon, interrupted January 9, 1905; Martinique-Port Plata, interrupted October 30, 1905; Cayenne-Pinhoiro, interrupted August 13, 1902; Curacao-Venezuela, suspended January 12, 1906.

Capt. W. L. Candee, managing director of the Okonite Company, New York, accompanied by his wife, returned from England a few days since, whither he recently went on a business trip. On the same steamer was Mr. L. G. Martin, a former expert cable operator, now identified with the Okonite Company, who was returning from an extended trip to Japan and China. In the interests of the Okonite company he completed at Shanghai, China, the work of laying the underground cable connecting the city office at that point with the shore end of the Commercial Pacific Cable Company's cable, soon to be laid, covering a distance of fifteen miles.

The cable steamer "Silvertown," of London, Eng., having on board the Commercial Pacific Cable Company's cable to be laid between Manilla and Shanghai, a distance of about 1,200 miles, arrived at Manila on March 22. The shore end of the cable was landed on the morning of

March 24. The ship stood off some distance from the shore because of the shallow water. The shore end was landed by means of a lighter. This work occupied the greater part of the day. At 6 P. M. on March 24, the Silvertown commenced paying out across Dewey's line of battle and toward Shanghai. The work of laying the cable is proceeding without mishap.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. James A. Prentice, a former incumbent, has been appointed manager of the office at Pittsfield, Mass., vice Mrs. S. W. Hayward, resigned.

Mr. F. H. Heidt, of the Columbia, S. C., office, has been appointed manager at Anderson, S. C., vice T. E. Howard, resigned to enter other business.

Mr. George H. Gilbert, manager of the office at Clarksville, Tenn., has resigned to accept a position in the Nashville office, that state. He is succeeded by Augustus Coke.

Mr. H. W. Gilbert, formerly manager of the New York Produce Exchange office, has been appointed manager at Albany, Ga., vice C. H. Walton, resigned to return to Washington, D. C.

Mr. J. S. Nickells, manager at Huntington, W. Va., has been transferred to a like position at Greensboro, N. C., the vacancy at Huntington being filled by the appointment of R. T. Trent, of the Ashland, W. Va., office.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. J. R. Hill, manager at Laramie, Wyo., has been transferred as manager to the Cheyenne office.

Mr. Ernest J. Cassidy has been appointed manager at the Chamber of Commerce, Milwaukee, Wis., vice Joseph Ramsey, deceased.

Mr. D. McNicol, of the superintendent of telegraph's office, Northern Pacific Railroad, St. Paul, Minn., has been appointed manager of the office at Butte, Mont.

Mr. E. Y. Ouderkerk, manager of the office at Johnstown, Pa., has resigned to enter other business, the vacancy being filled by the appointment of Mr. Leo Kerns, formerly night operator of the office, but latterly stationed at Pittsburgh.

Mr. R. E. McCord, night chief of the Great North-Western Telegraph Company, Montreal, Que., has resigned to accept the appointment of superintendent of the Dominion De Forest Wireless Telegraph Company, with jurisdiction from Toronto to Quebec.

General Mention.

The Commercial Telegraphers' Union of America will hold its third national convention in Cincinnati during the week beginning May 7.

The Central Typewriter Company, of Chicago, of which O. T. Anderson, a well-known telegrapher, is president, has a very fine exhibit at the National Business Show, now being held in that city.

The state of Chihuahua, Mexico, has just granted to Col. W. C. Greene of New York and associates a valuable concession, which includes the right to build telegraph and telephone lines in that state.

The new building now in course of construction at Bisbee, Arizona, to cost \$10,000, in which will be located the office of the Postal Telegraph-Cable Company, will be given the name of the Postal Telegraph Building.

The recent strike among postal and telegraph employees, it is said, has convinced the Russian government that women are more reliable than men, and henceforth only women will be accepted in the postal and telegraphic classes.

A strike of messenger boys in Syracuse, N. Y., a few days ago was due to the new and peculiar fact that the larger boys would not work with the smaller, whom they denominated as "kids," refusing to return to work until the little fellows were discharged.

The sub-committee of the United States Senate having in charge the anti-pass and telegraph frank bill, have killed the measure. The members of that dignified body apparently could not forego the pleasure of riding free on railroads or deadheading their telegrams.

Mr. J. W. Connors, an old-time telegrapher and a story writer of considerable ability, well-known in Montana and other western states, and who has been in the government employ for several years past, has re-entered the telegraph service and is located at Beardstown, Ill., as train despatcher for the Chicago, Burlington and Quincy Railroad.

The private wire of the Standard Underground Cable Company between New York, Philadelphia and Pittsburg and their factory at Perth Amboy, N. J., is giving excellent satisfaction. Charles A. Lawrence, of Pittsburg, is the chief operator of this private system, the executive offices of which are located in the Westinghouse building, that city. P. A. Le Blanc, of New York; James Long Schoonover, of Perth Amboy, and Christian Troeller, Jr., of Philadelphia, constitute the telegraph force.

Mr. J. A. Fortier, of the Canadian Pacific Railway's telegraphs at Montreal, Que., who was sent to Toronto to represent his company on the occasion of the banquet recently given by Sir

Wilfrid Laurier, rendered good service in being able to handle all the press matter for the different French papers throughout the Province of Quebec. Mr. Fortier, who is an old employee of the company, is also press operator for "Le Canada" in Montreal, and, being conversant with both the French and English languages, proved his value on the occasion named.

Mr. W. A. Logan, traveling solicitor of the Postal Telegraph-Cable Company of Texas, with headquarters at Dallas, that state, in a recent letter remarks that the best way to keep posted on current events in the telegraph and in the study of the same, is to subscribe for and to read TELEGRAPH AGE. He says: "I know when I find a man who is a careful and interested reader of the Age that I have found one who is going to make for himself something better than his present position. I am sure that I have read more good advice to the telegraph fraternity in TELEGRAPH AGE than I have ever found in all other periodicals combined."

Obituary.

Samuel L. Black, aged thirty-seven years, for fifteen years a telegraph operator, died at Calais, Me., on March 24.

Miss Eliza Cameron, manager of the Great North-Western Telegraph Company at Renfrew, Ont., died of typhoid fever on March 7.

Miss Hattie M. Adams, manager of the Western Union Telegraph Company at Fergus Falls, Minn., died of typhoid fever on March 17.

Joseph J. Durkin, aged twenty-one years, an operator for The Publishers' Press, employed by the "Daily Freeman," Kingston, N. Y., died March 6.

J. H. Kelly, aged thirty-six years, formerly an operator of the Postal Telegraph-Cable Company at Carbondale, Pa., died at Cincinnati, Ohio, March 12.

Edwin L. Ryder, aged sixty years, a former telegraph operator and latterly in the coal business, died at Vincennes, Ind., March 17. He was night manager of the Western Union Telegraph Company at Cincinnati when the Civil War broke out and was made operator at Camp Dennison, near that city, when troops began mobilizing. Later he became assistant general superintendent of the Ohio and Mississippi Railroad, afterwards division superintendent of the Iron Mountain and of the Missouri Pacific Railway system, respectively.

George Farnsworth, an official of the Bell Telephone Company at Detroit, Mich., and an old-time telegrapher, died in that city March 23, aged seventy years. In youth he learned telegraphy and became manager for the Cleveland and Erie Telegraph Company, which he was also interested in building. He was one of the builders

of the first telegraph line from Pittsburg to New Orleans, and aided in restoring Chicago's telegraphic communication with the outside world after the great fire. He aided in the construction of the Atlantic and Pacific telegraph lines in Michigan, becoming manager of the company at Detroit, and later built the Mutual Union lines between Chicago, Toledo and Detroit. In 1886 Mr. Farnsworth built the Michigan Postal Telegraph Company's lines and became a stockholder in that concern, which in 1891 was absorbed by the Postal Telegraph-Cable Company.

Samuel Hay Kauffman, president of the Evening Star Newspaper Company, Washington, D. C., died in that city March 16. He was born in Wayne County, Ohio, April 30, 1829, and therefore had nearly reached his seventy-seventh year. Early in life he learned the printing business and thus gained his first interest in newspaper work. He also learned telegraphy and at Wooster, Ohio, acted as operator for about three years, during which time he taught telegraphy to General Thomas T. Eckert, former president of the Western Union Telegraph Company. Mr. Kauffman always retained an interest in telegraphy and his acquaintance among telegraph men was extensive and cordial. In 1861 he was called to Washington by Secretary of the Treasury Chase and appointed to a confidential and responsible position in the Treasury Department. He was one of the founders of the American Newspaper Publishers' Association and for three terms was its president.

Wireless Telegraphy.

The British post office, which manages the telegraph business of the country, has adopted the word "radio" as the designation for a wireless telegram.

Another instance which proves the utility and great value of wireless telegraphy equipment on steamers at sea is shown by the fact that the Kaiser Wilhelm the Second, which arrived in New York on March 21, while in mid-ocean telegraphed the New York agents that the steamer had met with unusually rough weather and would be ten hours late in reaching port.

At the opening of the Newfoundland Legislature, the governor announced the conclusion of an agreement with the Marconi Telegram Company to operate a wireless system along the Labrador coast, which would be connected with the postal telegraphic service of the Colony. The agreement also stipulated that all ocean messages received by the Marconi stations on the island should be forwarded to their destination over the government cable, which connects with the Commercial Cable Company at Canso, Nova Scotia.

The American De Forest Wireless Telegraph Company has opened a Boston office for wireless telegraph business in the basement of the Equi-

table Building, that city. The sending station proper is in M street, South Boston. The rates are as follows: From Boston to Hartford, New Haven and Bridgeport, Conn., New York and Philadelphia and between those points, 20 and 1; from the Connecticut offices to Atlantic City, N. J., 30 and 3, to Sea Bright, N. J., 25 and 2; from New York and Philadelphia to the New Jersey points, 20 and 2; between any of the above points and Cape Hatteras, N. C., 40 and 3. The company expects to open offices at Portland, Maine, Providence, R. I., and Springfield, Mass., very soon.

Legislation for United States Government control of commercial wireless telegraph stations, in accordance with the recommendations of the interdepartmental board appointed by the President two years ago, will be urged on Congress by Secretary Bonaparte. Under the terms of a bill drafted by the board commercial wireless stations would be subject to regulation by the Department of Commerce and Labor and no station could be established until a license had been obtained. This bill has been pigeonholed until now, but the interests of the navy are said to make it imperative that private stations be regulated because of their interference with the government service. The bill proposing to enact the desired legislation will probably be introduced in the House and Senate at this session.

Timber Exhaustion.

Consul Ifft, of Chatham, Ont., contributes a valuable chapter on the future wood supply of this continent, bearing specially on the devastation of American forests, which threatens the United States with a great timber shortage a few generations hence. The consul's report covers a Canadian forestry convention, where timber statistics, the wood-pulp industry, wood supply of railroads, telegraph and telephone companies, etc., were discussed. The report in part says:

"Without reference to the general forest policy for Canada as suggested by the Canadian Forestry Convention, which was held at Ottawa in mid-January, some of the statistics presented at the sessions of the convention were of noteworthy interest. Especially was this the fact in regard to statistics of the wood supply and requirement of the railroads and telegraph companies, the wood-pulp and paper industry, and the wood supply for the manufacturer. One speaker referred to the common impression that when the United States timber supply was exhausted it could draw upon Canada. This was, he said, a mistake. The estimated quantity of matured timber in Canada is five hundred and thirty-two billion feet, and that at the present rate of consumption would last the United States exactly eleven years."

Orders for books on telegraphy, wireless telegraphy, telephony, all electrical subjects, and for cable codes, will be filled by TELEGRAPH AGE on the day of receipt.

Braun's New Method of Directing Wireless Messages.

BY A. FREDERICK COLLINS.

The first attempts toward directing wireless telegraph messages were made by William Marconi some little time before he had evolved his aerial wire system. His apparatus consisted of a small induction coil fitted with a battery to supply the initial energy, a key to break up the current into the alphabetic code, and a Righi oscillator for radiating the energy in the form of electric waves. In this case the oscillator was mounted in the focal line of a cylindrical parabolic reflector the length and opening of which was double the length of the wave emitted from the oscillator. This arrangement permitted the waves to be concentrated into a beam which could be projected in any desired direction. The receiver consisted of a resonator formed of two plates of metal with a detector connected to and interposed between them; this was likewise placed in the focus of a similar parabolic reflector, the opening of which was oppositely disposed to that of the transmitting reflector. With this combination it was possible to concentrate the waves into a beam, but the scheme was not practicable, at least over any considerable distance, since the oscillator and resonator systems were so limited in size that the emitted wave lacked the requisite amount of energy to be of commercial service.

The writer has previously described a system for directing electric waves invented by Alessandro Artour, of Italy, who by an ingenious arrangement of the spark-gap spheres and aerial wires was enabled to obtain circularly and elliptically polarized electric radiations, thus forming rays capable of being propagated in any direction and without the use of grids to reflect them. Considerable success has attended these experiments, messages having been transmitted over 300 kilometers, while another station less than 100 kilometers distant and outside the effective line could not receive them.

Prof. Ferdinand Braun, of the Strasburg Institute, has recently brought out a new method for directing wireless messages in which it is not necessary to bunch the waves into a ray. His method is based on the theory of wave intensification and rarefaction by interference. Thus, assuming that two aerial radiating wires are tuned to the same period of oscillation and are it should not be difficult to obtain interference phenomena provided the oscillations set up in one of the aerials have a phase difference of a small fraction of a second from those of the other.

While the time difference required between the two series of oscillations is exceedingly small, yet it is not easy to tune both oscillations to the same period and yet differentiate the time sufficiently to produce a lag necessary to bring about the desired interference.

This was finally accomplished in the laboratory by throwing the two series of oscillations out of phase by means of an inductance inserted in one of them near the spark-gap. The results on this small scale seemed to agree fairly well with the theory on which it was based and it was decided by the investigator to try out the system under conditions that prevail in practice, that is, using loftier air wires and grounding the complementary terminal of the spark gap.

The place selected for making the out-of-door tests was the polygon military drill grounds at Strasburg. Three different stations were set up within this limited space, one for sending and the other two for receiving. At the transmitting station, instead of the usual aerial wire there were three radiating wires arranged at equidistant points from each other around the building and several meters from it. The aerials were suspended from the tops of their respective masts in the usual manner. The lower ends of these wires led into the building which housed the transmitting apparatus. The lower terminals of all the aerials were connected to one side of the spark gap, the opposite of the latter being connected to the earth in the ordinary way. Now, when the disruptive discharge took place, the aerials a b c were energized by the oscillations thus set up, but while the oscillations in the aerials b c were exactly in step, those in a lagged slightly, due to the added inductance near the spark gap; yet the values of inductance and capacity remained identical, so that the length of the waves emanating from each remained constant. When all the aerials were emitting waves, those radiated by a would, in virtue of the fact that it was out of phase with b and c, set up an interference, with the result that an electrical shadow was cast in a direction at right angles to the plane of the aerial wires b and c, and hence the radiation of waves in that direction was a minimum. Oppositely, if the oscillations in the aerial a were made to take place in advance of those occurring in b and c, provided the difference in time was rightly proportioned, then a wave more or less amplified would result and its propagation would be in the direction previously stated, while the shadow due to the interference of the waves on b and c was projected from the rear of a.

In this system of amplifying the waves in one direction and diminishing them in another, the greatest difficulty seems to grow out of the fact that it is of the utmost importance to time the period of oscillation with absolute precision; and when it is stated that this difference of phase amounts to approximately only one ten-millionth of a second, it will be seen that the adjustments of the co-efficients are of an extremely delicate nature. From Prof. Braun's experience with high frequency oscillations he concludes that the difference in time between the phases of the aerials can be adjusted to within one two-hundred-millionth part of a second, or more popu-

larly expressed it would amount to a difference of only one second in six years.

Two or three years ago the scheme was tried to form a parabolic reflector of gigantic proportions by arranging a number of aerial wires around a radiating aerial wire so that the latter would be in the focal line. This arrangement failed to produce the desired results since the wires thus placed permitted much of the energy to be lost through dispersion. Prof. Braun investigated the reflection of wires on a scale sufficiently large to show its utter impracticability. He employed waves having a length of 120 meters and placed the radiating aerial wire a distance of 30 meters or a quarter of a wave-length from the reflecting wires, which had an opening equivalent to the length of the waves to be emitted.

By utilizing the three-wire system the large and complicated reflecting-wire scheme is eliminated, the distance of transmission is increased and, what is equally advantageous, it is possible to direct the messages in any one of six directions. Without removing a single connection the waves can be sent in either one of two directions by merely increasing or decreasing the frequency of the oscillations in a so that these will be a ten-millionth of a second faster or slower than the currents that surge through b and c. By changing the relative phase values of a b c, it is obvious that any of six different predetermined directions can be obtained at pleasure.

In the recent experiments made by Prof. Braun and his co-workers, while messages were being transmitted in one direction and received by a station in line with it, a second receiving station at right angles to the line of propagation, though much nearer the transmitter than the first, was not affected.

Should it prove of advantage to transmit in more than six directions, five wires would be used, with the result that any one of ten stations, assuming they were located at equidistant points about the transmitting station, could then be communicated with to the exclusion of all the others. The maximum distance covered in these preliminary trials was 1.3 kilometers; it is stated, however, that a commercial test is to be made at an early date.—Scientific American.

The Commercial Future of Wireless Telegraphy.

In a recent address before the Beacon Society of Boston Mr. John Stone considered at length the commercial future of wireless telegraphy. Before entering on the main subject of his address he noted some recent important improvements in details, according to the "Electrical World." One of these is a means devised by his principal assistant, Mr. Sewell Cabot, whereby the receiving operator in wireless telegraphy can "break in" just as he does in wire telegraphy, and correct any error or ask any question of the transmitting operator that he pleases. At first it was only possible in wireless telegraphy to send

about twelve words a minute with any precision whatever, while at present it is possible to send and receive as fast as on a wire line, a speed of about forty words a minute having been attained. The invention of Mr. Cabot is of great commercial importance, for it obviates repetition to a very great extent, and one may almost say that by means of this invention twice the amount of matter can be transmitted in a given time that would otherwise be possible.

Mr. Stone said that the future of wireless telegraphy depended upon the solution of the problem of selectivity—a problem which he considered had been solved by his system. He did not believe that the wireless telegraph is going to have its greatest field in competing with transatlantic cables. The great field for a selective system of wireless telegraphy is that where the most people live and where most people wish to communicate, and that place is right on land. No considerable competition would, he believed, arise between wire lines and wireless telegraph interests, but rather one will help the other. He drew a distinction between the trunk line service of wireless telegraph companies and the lines, enormously in the majority, which feed this service. The maintenance of the latter costs from thirty to thirty-three per cent. per annum, and they do not yield enough business to pay for this maintenance, money being lost on every message practically that goes over one of the subsidiary lines. The trunk lines, however, are extremely profitable, and more than make up the deficiency. There is a great future for wireless in supplanting these feeders to telegraphic trunk lines—in doing service now done by one and two-wire lines, and even up to the ten-wire lines. In this there would be a very handsome profit, not a mere manufacturer's profit, but a profit on the patents involved as well as on the apparatus. The selective system of wireless telegraphy will not, however, remain long on a par with wire lines in the matter of operation, but will later open up fields of its own in which wire telegraphy cannot compete because of the excessive cost of pole lines and their maintenance. As an example of new applications, Mr. Stone stated that within the next year it will be possible for a ship more than one hundred miles away from the coast to obtain exactly the bearing of any light on the coast within one hundred and fifty or two hundred and fifty miles of the vessel; and not only of one light, but of two or more, and thereby be enabled to determine exactly her position.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

Better be despised for too anxious apprehension than ruined by too confident a security.—Burke.

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CABLE ADDRESS: "Telegraph," New York.
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CHANGES OF ADDRESS.—The address of a subscriber will be changed as often as desired. In ordering a change of address the old as well as the new address must be given.

REMITTANCES to Telegraph Age should be made invariably by draft on New York, postal or express money order, and never by cash loosely enclosed in an envelope. By the latter method money is liable to be lost, and if so remitted is at the risk of the sender.

NEW YORK, APRIL 1, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientele. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The reminiscent article, "Looking Backward at Omaha," published in another column, is eloquent of the fact that the telegraph has proved a valuable stepping stone in the lives of hundreds of operators who have graduated from the key into the larger possibilities of life. Of the little band employed at Omaha in the late seventies, it will be observed that a number of them who left the service have since acquired success and large wealth.

Mr. Baker on Earning Promotion.

There is much valuable food for thought for telegraphers, whether at the key or otherwise, in the remarks made by Mr. William H. Baker, vice-president and general manager of the Postal Telegraph-Cable Company, at a recent dinner of Postal employees. He said that it was the policy of his company always to endeavor to fill the higher

positions of whatever grade by promotions from within its own ranks. He urged, therefore, as a matter of self-interest to the individual, that every ambitious employee should earnestly strive to fit himself or herself for advancement in order that they might be ready to go up higher when the opportunity for promotion came. It might be, he said, that possibly the occasion would not offer in the telegraph service, although the telegraph has urgent need of men and women qualified to step up to places of larger responsibility; but if not, then the reward would surely come in avocations outside of the telegraph, for the world has need of workers of ability. In any case, the one thing necessary to secure recognition, whether in the telegraph or out of it, is intelligence and capacity for practical work.

What Mr. Baker has to say takes on a deeper significance from the fact that he himself, like most of the other officials of his company, began life as a messenger and office boy, and consequently knows whereof he speaks.

His are true words, fittingly spoken, and coming from the managing executive of a great telegraph company, whose interest in the welfare of his employees is well known, should carry especial weight and cheer, inspiring courage and ambition on the part not alone of those who heard them, but of all others who gain their livelihood in the service of the Postal company.

It may be remarked in this connection that it is a notorious fact that the telegraph—both the Postal and Western Union companies—are constantly on the lookout for men competent to fill positions of responsibility, more especially those of chief operator, manager and superintendent. There should be men always readily available capable of holding these important places. It will be observed that Mr. Baker, in imparting this sound advice, pursues the same line of thought so frequently expressed in TELEGRAPH AGE. It cannot be adverted to too frequently, for its continual utterance emphasizes a truth so fundamental in character that, acting on its acceptance will direct the individual to the path that leads to success in life. The student and close observer who is fired with the determination to win in life's struggle, need have no fear of the final outcome of his efforts. His ambition will be rewarded sooner or later.

Unightly Telegraph Poles in England.

Small local authorities—and even some of the larger ones—in England, remarks the London Electrical Review, of late have manifested a strong disposition to oppose the erection of telegraph poles, on the ground that overhead wires are unsightly and unnecessary, and that the time has arrived when the postal authorities should put all the wires underground. Needless to say, the powers of the postmaster-general enable him to override such opposition; but the spirit underlying this movement is worthy of notice. The

municipal authorities are obviously ignorant of the heavy cost of placing the wires underground, but in this, as in other cases, their ignorance does not in the least deter them from airing their opinions. It would not matter if they had no power to interfere, but unfortunately they have to be reckoned with in each case, and are able to delay progress—not only in telegraphic work, but also in other directions. It is a pity that there is no means of educating them to appreciate the facts. The daily press, the natural medium for conveying such information, is only too often itself immersed in the mists of ignorance and prejudice.

[It cannot be said that the management of the telegraphs in England, so frequently held up as a model State proposition, meets wholly and always with favor. If criticism occasionally becomes bitter and satirical, whether directed against the administration of the postmaster general, the head of the telegraphs in Great Britain, or municipal authorities, it can scarcely be wondered at in view of shortcomings that, to us on this side of the water, appear to be glaring. It may be remarked that it is a matter of congratulation that our own postmaster general, estimable gentleman though he may be, is not in a position to interfere with and overrule the will of the people. Our English contemporary will perhaps be surprised to learn that the owners of all overhead wires in the United States, in large as well as in small cities, are anxious to place them underground. The necessary expense of so doing does not enter into the calculation, for the benefit to be derived to the service in placing the wires underground is vastly more important in crowded centres than to permit them to remain overhead, always an unsightly spectacle. The wire conditions that prevail in the cities of Great Britain could not exist in this country, at least in this one particular.—Editor.]

Large Gifts to Institute Building Fund.

T. C. Martin, chairman of the land and building fund of the American Institute of Electrical Engineers, announces some large and important contributions to this fund, the object of which is to raise \$200,000 for the land in New York city on which the United Engineering Building, given by Mr. Carnegie, is now being erected. The total cost of the land is \$540,000, and the obligation is divided between the Electrical, Mechanical and Mining Engineers.

Mr. Clarence H. Mackay, president of the Postal Telegraph-Cable Company, has given \$5,000 to the fund. Mr. U. N. Bethell and Mr. J. J. Carty, members of the committee, have advised it, on behalf of the American Telephone and Telegraph Company, the Western Electric Company, the New York and New Jersey Telephone Company and the New York Telephone Company, that these corporations have jointly contributed \$25,000 to the fund, in view of the great benefits that

the existence of this new engineering center will confer upon the electrical arts and upon their employees in the widening field of telephone engineering.

Other notable gifts to the fund are \$1,200 from Mr. E. W. Rice, Jr., and \$500 from Mr. T. D. Lockwood, electrical expert of the American Telephone and Telegraph Company, Boston, Mass., and an old-time telegrapher and author of many telegraph works. A number of subscriptions of lesser amounts have been received from the Institute membership at large, and in this manner the fund has now reached the total of over \$130,000, or two-thirds of the required amount. With the campaign it has already inaugurated, and the plans now maturing, the committee is hopeful of having the entire sum pledged before the Institute moves into its new home. A view of the building and the plan of the committee having its construction in charge, bearing on the relations of the telegraph to the electrical industries in general, appeared in the February 1 issue of "Telegraph Age."

The following correspondence relative to Mr. Clarence H. Mackay's contribution explains itself:

New York, January 31, 1906.

Mr. F. W. Jones,
253 Broadway, New York, N. Y.

Dear Sir:

Replying to your letter of the 15th instant, suggesting a donation by me to the land and building fund being raised by the American Institute of Electrical Engineers, to be applied to the purchase of ground upon which Mr. Carnegie has undertaken to erect an engineering building, and referring to Mr. Guy's letter to you of the 23d instant: I will take pleasure in contributing the sum of \$5,000 to the fund in question, with the understanding that persons engaged in telegraphic business, particularly the employees of the Commercial Cable and Postal telegraph companies, and the members of the regularly organized telegraphers' associations in New York, namely, The Telegraphers' Mutual Benefit Association; The Telegraphers' Aid Society; The Gold and Stock Life Insurance Association, and the Magnetic Club, shall be included among those who are entitled (subject to proper rules and regulations) to avail of the facilities and privileges of the building.

Thanking you for bringing this matter to my attention,

Yours very truly,
Clarence H. Mackay.

New York City, March 15, 1906.

Clarence H. Mackay, Esq.,
President Postal Telegraph-Cable Co.,
253 Broadway, New York City.

Dear Sir:

As chairman of the land and building fund of the American Institute of Electrical Engineers, I have been requested by the committee as a whole to express to you formally and very heartily its thanks for your generous contribution of \$5,000 toward the purchase of the land upon which the United Engineering building is being erected. You will doubtless be glad to hear that with other liberal contributions our fund has now reached a total of \$130,000.

Your letter of gift expresses an interest in the welfare of the telegraphers of the country and the desire that under the proper rules and regulations their organizations in this part of the country shall be permitted to enjoy the facilities of the building. On behalf of the committee, I beg to state that this is exactly the desire and purpose of the committee and of the institute, and that

we hope to see every employee in your service a frequent visitor within the building, enjoying freely all the privileges that Mr. Carnegie, himself an old telegrapher, has enabled us to extend. The administration of the building will be in the hands of the United Engineering Society, representative of the three founder bodies to whom the gift of \$1,000,000 has been made, and it is, of course, with that body that all the scientific, technical and social organizations in our various fields will have to deal when the building is completed and ready for occupancy. I shall be glad, however, myself to make it a personal matter to see that your express wishes are carried out to the fullest degree.

Again thanking you for your handsome gift and felicitating you upon the generous public spirit which has led you to recognize our work and its claims, I have the honor to remain,

Yours truly,

T. C. Martin, Chairman.

Twelve Hundred Thousand Miles of Wire.

The story of the fiftieth anniversary of the Western Union Telegraph Company, told with so much graphic interest in the March 16 issue of TELEGRAPH AGE, has attracted wide attention, eliciting much comment by the press generally, both of the United States and of Canada. The New York "Sun," in its Sunday issue of March 18, had this to say editorially under the title given above:

"Next month the Western Union Telegraph Company will be half a century old. We print the story of its early career, condensed somewhat from an article published in TELEGRAPH AGE, and based mainly on the interesting historical investigations of Mr. A. R. Brewer.

"The vast system now operated by the largest telegraph corporation in the world under the vigorous management of Colonel Clowry is the product of successive consolidations, absorptions of rival concerns, combinations in the direction of monopoly. That this process has been against the public interest we do not think that any candid student of the Western Union's record and present condition will maintain, no matter what are his general views on the subject of corporate aggrandizement. The Western Union has grown with the nation. It has served the people well, it has met intelligently the increasing demands of a progressive civilization, it has steadily reduced the cost of telegraphic communication, and it is to-day one of the finest monuments of American enterprise, energy and private ownership. We invite attention to the circumstance that the owners of the stock in this corporation number ten thousand, or about one owner and capitalist for every three of its thirty thousand employees.

"Congratulations and good wishes are peculiarly due to the Western Union from the newspapers of the United States, for of the printing press the telegraph is the handmaiden."

Legal.

The fourth court of civil appeals in Texas recently rendered a decision in the case of the Houston Rice Milling Company against one of

the telegraph companies. It seems the managers of the milling company sent a cipher telegram to their agent telling him to pay \$3 for rice, as they had reason to suspect the price would fall. The agent had been paying \$3.25 a barrel. The telegram was delivered to a wrong address. The agent of the milling company bought rice all the next day at a price twenty-five cents higher than any other buyers were paying. The loss to the milling company was large, and they brought suit. It was won in the lower court and appealed. The decision was affirmed in the higher court.

A New Standard (?) for Excellence.

A railroad telegraph operator at Adrian, Mich., advertises in a local paper as follows: "I will prepare young men for Postal telegraph service in from six to eight weeks. Salary \$35 a month. It does not require but very little knowledge of the art to hold a position of this kind. Young men prepared for railroad service in three months. Salary \$45 per month and upward. It takes a blockhead two years to learn it. For further particulars address N. M. Rexhart, Adrian, Mich."

We always supposed that the Postal Telegraph-Cable Company's service required the best telegraph timber that could be obtained, and we are surprised to learn that Mr. Rexhart is prepared to turn raw material into the finished product of a postal operator in so limited a period as from six to eight weeks. Postal operators everywhere will doubtless sadly realize that they have wasted much valuable time in acquiring the art they now so skillfully practice, when a man like the advertiser, Rexhart, professes to stand ready to teach all requirements necessary for Postal service within such time limits that will make most operators stand aghast.

Holland Telegraph Statistics.

During the year 1904 the telegraphic system of Holland, according to the reports just issued, was increased by 132.6 kilometers of line and 809.5 of wire, and at December 31, 1904, there were 6,912.9 kilometers of line and 30,412.5 of wire. Of 5,334 interruptions during the year, 18 were due to broken poles, 324 to broken wires, 2,394 to contact and 71 to faults, etc., in sub-fluvial and subterranean cables. Special experiments were made in connection with wireless telegraphy. In 1904 there were 1,187 offices, as against 1,166 in 1903. There were 3,000,483 interior telegrams handled during the year, a decrease of 3.7 per cent. on 1903, and the average number of words per telegram was 14.36. The telephone was largely used in the delivery, etc., of telegrams. One hundred and eleven thousand two hundred and eighty-two telegrams were sent to and from the United States.

The Invention of the Telephone.

Thirty years ago, on March 10, in Boston, the first message ever delivered by telephone was spoken by A. Graham Bell, and heard by his associate, Thomas A. Watson. There was no pompous *mise-en-scène*, such, for example, as Samuel F. B. Morse provided for the delivery of the first message by telegraph; and, indeed, the very lack of publicity and ostentation conspicuous on this occasion was characteristic of the course these two young scientists followed, writes E. F. Harkins in the Boston Transcript.

The scene was the top floor of the boarding-house at 5 Exeter place, an offshoot of Chauncy street. Bell and Watson, associates in the invention of the telephone, had taken rooms in Exeter place nearly a year before, soon after Bell's discovery that the transmission of sounds by electricity was practicable. And it may not be amiss, in view of all sorts of stories still current, to relate the facts concerning that discovery.

In 1874, when Bell was professor of vocal physiology at Boston University, he conceived the idea that two or more Morse dot-and-dash messages could be sent over the telegraph wire at the same time; and consequently he began to experiment with the multiple or harmonic telegraph. Bell's harmonic telegraph was based on the well-known law of sympathetic vibration, which may be illustrated by sounding a note either with the voice or with some musical instrument near the undamped strings of a piano. Thus the string attuned to the pitch of the sound which has been uttered will be sent vibrating, while the other strings remain almost unaffected. If two notes are sounded, then the two strings in corresponding pitch will vibrate, and so on.

Bell, in 1874, went to the shop of Charles Williams, at 109 Court street (now Palace Theatre), to have the apparatus for his harmonic telegraph experiments made and Mr. Williams assigned this task to a young workman named Thomas A. Watson. It was in this way that the two young men became associated. In his experiments Bell used, not piano strings, but pieces of clock spring differing in tune or pitch according to length and thickness. The instrument for receiving the signals was one of the strings clamped at one end to a pole of an electro-magnet, while the free end projected over the other pole, near enough to feel the effect of an electric current passing through the magnet coil, but far enough to vibrate without touching anything. The transmitter was similarly constructed, except that each spring was kept in constant vibration by its electro-magnet, a second screw being so placed that the spring would touch it at every vibration. This furnished a means of interrupting the current a number of times a second, according to the pitch of the spring, and, by tuning and then connecting receivers and transmitters to the line with signaling keys and a battery, as many messages as

there were pitches could be sent simultaneously. Such, in substance, was Bell's harmonic telegraph; and such was the apparatus made by Mr. Watson according to directions given by the inventor.

In the course of their work together, Bell mentioned to Watson that he was convinced that the "telegraphing of speech" was possible, and he explained his theoretical conception of the principles on which the development of the idea would depend—a conception since proved correct, says Mr. Watson, by the fact that the entire development of telephony has been in exact accordance with Bell's original idea. Bell's view was that the transmission of the timbre or quality of any sound, or of articulate speech, could be effected only by some instrument in which the air vibrating under the influence of sound would impress on an electric current analogous vibrations. The electric current necessary for this transmission he called an "undulatory" current, to distinguish it from the intermittent current used in telegraphy. He had no doubt at all of the theoretical possibility of the idea, and, in fact, he showed Mr. Watson a sketch of a complicated instrument which might be useful in the application of the idea; but his confidence that this instrument could be operated practically was not sufficiently great to warrant his risking the rather large sum of money that would be needed for its construction. He had only his income from his professorship, and the experiments in multiple telegraphy, which gave promise of success, were about as heavy a drain as his income could stand.

On the afternoon of June 2, 1875, the two young men were experimenting in the attic rooms over Williams' shop, and the harmonic telegraph was stubbornly resisting their endeavors to make it work satisfactorily. Whether it was the baking heat or just the proverbial perversity of inanimate things they never learned, for all of a sudden came the realization of Bell's idea that the quality of sound could be transmitted by electricity—and the telephone was born.

Bell had been trying to improve the action of the receivers and was retuning one of their springs. To see if the pitch was correct he pressed the spring against his ear and was listening for the faint sound of the intermittent current passing through the magnet—a sound that could always be heard in that way whether the spring was rightly tuned or not. Suddenly the spring of the receiver in Watson's room stopped vibrating, and, to start it, the mechanic snapped it with his finger. At once a great shout came from the other room, and forth burst Bell, inquiring what had been done. "Do it again!" said he, when Watson had explained; and the youth from Williams' shop downstairs spent the rest of the day snapping springs.

What had happened? Just this: The spring which Watson snapped had been permanently magnetized by long use close to its magnet and

was in a condition to generate by vibration Bell's long-dreamed-of undulatory current. When this current passed through the magnet of the receiver pressed against Bell's ear, it caused the spring of the instrument to vibrate, and the fact that this spring was resting against Bell's ear caused it to act as a diaphragm. The expert acoustician instantly perceived that instead of the harsh, nasal scream of the intermittent current—described as something like the noise made by the cicada—he heard not only the pitch but the peculiar soft twang of the spring which Watson had plucked, and, furthermore, he perceived that the current carrying such a sound was what he needed to make practical his preconceived idea of the electric transmission of speech.

"Such an undulatory current had undoubtedly been generated many times before," said Mr. Watson the other day, "but never before had it reached the ear of a man whose mind had been prepared by years of thought and scientific training to perceive instantly what it meant—what it could be made to accomplish in the service of man. The real invention of the telephone was no accident, for it dates from the mental conception by Bell of an undulatory electric current. The plucking of the spring that afternoon might be called an accident, but it had happened before and would probably have happened again. Without the idea in the mind of the man listening to the effect thus produced, however, it would have continued to be regarded as one of the little troubles incident to the development of multiple telegraphy. As it was, Bell's theoretical conviction that such a thing was possible turned the incident into a great pregnant event."

After that, work on the harmonic telegraph gave way to enthusiastic endeavors to develop the telephone. It was but a little step to attach a diaphragm—a tightly stretched piece of drum-head parchment—to the steel spring which Watson had snapped and to devise a mouthpiece for the purpose of concentrating the voice upon it. Thus the spring would be forced to follow the vibrations of the voice, instead of vibrating as before. When these attachments to the harmonic receiver had been made, Bell had his first speaking telephone.

(To be continued.)

Edison's "Haunted" Room Scares Guest.

Mr. Edison is a lover of a good practical joke. When the phonograph was but newly invented the great scientist placed one in the bedroom of a guest. Just as his friend was disrobing a voice exclaimed: "Eleven o'clock—one hour more." Slumber did not descend upon the eyelids of the visitor during that hour. At midnight a second voice cried: "Twelve o'clock—prepare to die." This was too much for the astonished guest, who rushed from his room. Outside he met the inventor, who was convulsed with laughter.

The Telegraphic Typewriter.

BY ROMYN HITCHCOCK.

It is not many years since telegrams were received in New York printed on narrow tape and distributed to customers in that form. This was in the days of the Phelps printer, no longer in use. There were objections to the tape telegrams, for whatever advantages they possessed in legibility over the penmanship of operators were offset by the inconvenience of preserving and filing. However, across the water and particularly in France, the old Hughes printer is still operating and doing most effective work on long lines and cables. It is claimed by the telegraph authorities abroad, that more service can be got from the Hughes printer duplexed than from a quadruplex Morse line, and there is obviously an economy in operation, the messages being automatically printed.

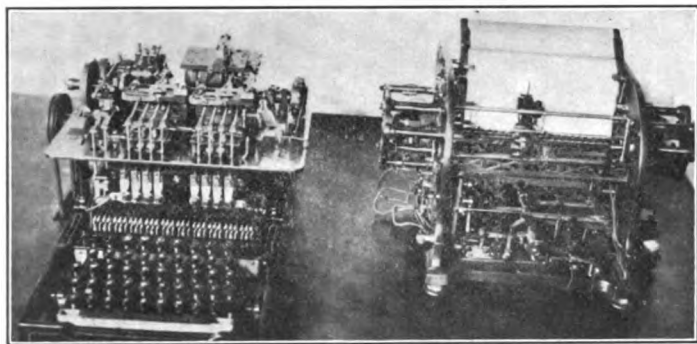
It is said that the Hughes apparatus is capable of sending about forty words a minute. It is not, therefore, a fast-working machine, although considerably more speedy than its stock ticker successors, and it requires special training to operate the keyboard. It depends upon synchronism of transmitter and receiver. This synchronism seems to be easily maintained so long as the operator continues to send regularly, but a momentary interruption throws the instruments out. Consequently Hughes operators are exceptionally industrious during working hours. A single impulse prints a letter, but it must be sent at the right time or it may print some other letter. A printer largely used on French lines is the Baudot, operated from a keyboard which sends, if the writer recollects aright, five impulses for each letter.

While the many advantages of printing telegraphs have thus long been recognized in foreign practice they have been but lightly esteemed in this country, save for stock and news tickers. But recently there has come a remarkable change. The Buckingham printer led the new movement, soon followed by the Blickens-erfer-Buckingham-Barclay machine, which now seems to be most in favor. The introduction of these two printers by the Western Union Telegraph Company, has, however, controverted in a most remarkable way a contention which has been long and strenuously maintained by the official and technical staff. This contention was that the preliminary preparation of tape required by high speed systems caused loss of time and was quite impracticable for commercial business. It is now well up to those gentlemen to explain how they can use tape transmission for the comparatively slow printing telegraphs if it is inapplicable to high speed working.

These printers with punched tape transmitters are mentioned here to make clear an important distinction between printers of that kind, intended for use on long lines in the general telegraph service, where speeds of seventy-five to eighty

words a minute can be utilized with automatic sending, and another class of machines operated directly from a typewriter keyboard. The distinction is important not only because of the difference in service, but also for the reason that a printer may work admirably with uniform sending from punched tape, while it might fail under the irregularities of keyboard operating at a slower average speed. For it is not only the average speed that the receiver must respond to in keyboard operating but the highest speed between any two successive letters. Thus it appears that the keyboard printer must have a larger margin of speed over the average than an automatically operated printer.

The great value of a page-printing telegraph which can be operated at typewriter speed from an ordinary typewriter keyboard by any person, for use on private wires, for communication in cities or between offices and warehouses or factories situated in the environs has long been recognized. Many attempts have been made by inventors to produce such a napparatus but all seem to have fallen short of the requirements. Even the simple stock tickers which work at not more than a speed of twenty words a minute, require a two-wire circuit.



THE WRIGHT KEYBOARD TRANSMITTER AND PRINTER

Mr. John E. Wright, well known as a telegrapher and an inventor in connection with tickers and printing telegraphs, has recently perfected, as the culminating achievement of thirty years of experience in this field, a most remarkable keyboard printer.

The transmitter is a separate keyboard machine which any typewritist can operate without previous experience. A number of printers can be operated together on a single wire circuit. The paper used is of ordinary letter paper width. The speed of operating is quite up to commercial requirements. Few operators can write fifty words a minute and those who can are not likely to do it in business communication. The speed limit of the apparatus, however, is considerably above that. Perhaps the best illustration of the speed possibilities is given by the method of testing applied in the assembling shop. The foreman has acquired great skill in writing the word "their" and spacing it across the page. It can

be written and spaced ten times on a line and this is regularly done in eight seconds. This is at a speed of seventy-five words a minute. Adding time for shifting the paper and returning to the beginning of the next line, a speed of seventy words a minute is practicable on the machine. This result is a great achievement. It is so remarkable that there is a fascination in watching the swift-moving type wheel and it seems incredible that it can always present the right letter.

The mechanism is not complex. It is strong and durable. As soon as this apparatus becomes known it will doubtless find many applications. It is especially valued wherever a record is desired at the sending office. It is regularly twice as speedy as ordinary Morse operating, and is believed by its inventor to be well adapted for many important applications in the telegraph service.

The Faith of Prof. Morse.

In a conversation with the late Professor S. F. B. Morse, the inventor of the telegraph, Rev. George H. Hervey asked him this question:

"Professor Morse, when you were making your experiments yonder in your rooms in the university building, did you ever come to a stand, not knowing what to do next?"

"Oh, yes, more than once."

"And at such times, what did you do next?"

"I may answer you in confidence, sir," said the Professor, "but it is a matter of which the public knows nothing. Whenever I could not see my way clearly, I prayed for more light."

"And the light generally came?"

"Yes. And may I tell you that when flattering honors came to me from America and Europe on account of the invention which bears my name, I never felt I deserved them. I had made a valuable application of electricity, not because I was superior to the other men, but solely because God, who meant it for mankind, must reveal it to some one, and was pleased to reveal it to me."

In view of these facts, it is not surprising that the inventor's first message was: "What hath God wrought."

Mr. George W. Conkling, the expert telegraph and Phillips' code operator, states that a peculiar error grown out of the misuse of Phillips code and lack of judgment on the part of the operator, came to his notice recently. The press dispatch should have read: "John Smith was placed under arrest," but instead it read, "John Smith was placed under a railroad." "Urr" is considered by many as good code for "under arrest," but in Phillips code "und" stands for under, and "arr" stands for arrest. Such an error could not have occurred if the strict code rules had been followed.

TELEGRAPH AGE will furnish operators with just the kind of practical information they require.

Looking Backward at Omaha.

BY J. W. HAYES.

It would have been hard to find, outside of New York, as fine a lot of operators and gentlemen as were collected in the Western Union office, Omaha, in the late 70's. The work of the office was of such an expert nature that only the flower of the profession was eligible for service.

Frank Lehmer, the manager, was well liked by the public and popular with his employees and was a good company man. His father, William Lehmer, was receiving and delivery clerk and was a genial disciple of the old school. One of the best operators in the country at that time was Frank B. Knight, who was the day chief. Mr. A. G. Drake was night chief, and, like Edgar B. Beecher, the all night chief, performed his duties to the satisfaction of all. The operating force, as nearly as I remember, was as follows: Willis J. Cook ("Bif"), whom Walter P. Phillips has immortalized in picture and story; Court M. Cunningham, P. J. Tierney, George W. Gardanier, George McMahon, Judd S. Thompson, Levi S. Wild, James H. Largay, Edward J. Fullum, Nicholas C. Burke, George F. Stewart, Clifford E. Mayne, Edward Rosewater, O. H. Gray, Frank P. Williams, Timothy Collins, John Kelly, H. M. Goewey, "Dad" Armstrong, John L. Morris, Harry Nichols, Thomas F. Kehoe, Crosby J. Ryan, Henry Smith and others whose names have passed from my recollection. George Gardner, whose generous nature is of fragrant memory, was our lineman.

The employees at the Atlantic and Pacific telegraph office were: L. M. Rheem, manager; Aaron B. Hilliker, J. W. Ellsworth and Miss Fannie Wheeler, operators; George M. Myers was operator in Superintendent J. J. Dickey's office, and L. H. Korty was Colonel Dickey's chief clerk.

Of the little band of operators that were in Omaha at the time I write of, there is not one remaining in the old capacity. Colonel J. J. Dickey, who was superintendent of the Western Union Telegraph Company at this point for a quarter of a century, died on December 29, 1903. George M. Meyers is now and has been for many years past, one of the leading capitalists engaged in electrical enterprise at Kansas City, Mo. William Lehmer was gathered to his fathers some ten years ago at a ripe age. "Bif" Cook succumbed to the Panama fever fifteen years ago. James H. Largay and T. F. Kehoe died of consumption. H. Milton Goewey was a victim of the dreaded fever scourge in Memphis in '78. Harry Nichols died in the South many years ago.

Frank Lehmer has become a successful banker in Colorado. Frank B. Knight tied up to the telephone service early in its existence and is now abundantly reaping his reward at Dallas, Texas. A. G. Drake is with the Postal Telegraph-Cable Company in Chicago and I hope is doing well. The most unique figure next to "Bif" Cook on the force was Edgar B. Beecher, who was a man

of varied ability and experience. He could turn his hand to anything and his accomplishments came in very handy in his later life. Mr. Beecher is now a prosperous business man in Los Angeles, California. Court M. Cunningham went to New York many years ago and is still there with the Western Union Telegraph Company. Nicholas Burke has been a prominent figure in telegraphic and newspaper circles in various parts of the country. Timothy Collins is a "big policeman" now and does duty in Buffalo. Clifford Mayne became a millionaire, went to California and was lost in the crowd of other millionaires on the Pacific Coast. Frank B. Williams has long been with The Associated Press in Louisville, Ky. Judd S. Thompson is in Washington with the Western Union Telegraph Company. Homer Gray is considerable of a tourist. He was a brainy young fellow and should have made his mark. George McMahon has grown gray in the service of the Western Union Telegraph Company, and is now stationed at Portland, Ore., where he fills the position of chief operator with much credit. John L. Morris is still in telegraphic harness, being located with the Western Union Telegraph Company at San Francisco. P. J. Tierney is also with the Western Union Telegraph Company in New York, and holds a responsible position in the Central Cable office at 16 Broad street, that city. George W. Gardanier rose to be assistant electrical engineer of the Western Union Telegraph Company, but tiring of life, owing to continued ill health, he committed suicide on October 26, 1900. Levi S. Wild is now manager of the Western Union Telegraph Company at Butte, Mont. Edward Rosewater entered journalism, a profession in which he rapidly rose, and is now the proprietor and editor of the Omaha Bee. Crosby J. Ryan is the manager of a branch office of the Western Union Telegraph Company at Detroit, Mich.

Of the Atlantic and Pacific force Mr. Rheem is now a prosperous doctor of Minneapolis. J. W. Ellsworth, who was the youngest brother of George Ellsworth, the celebrated operator, whose handiwork in tapping wires was of great help to the Confederate General Morgan in his invasion of the North during the Civil War, went West and is now ranching somewhere in New Mexico. Miss Fannie M. Wheeler was probably one of the finest lady operators and electricians of her day. She married a Mr. Merryfield, and later returning to the telegraph service, is now in Colorado. Aaron B. Hilliker was one of the greatest characters ever known to the profession. He was a born actor, a minstrel singer, a good newspaper man and a first-class telegraph operator. I don't know his whereabouts, but I hope that prosperity is attending him. L. H. Korty was ever a kind, affable gentleman and a thorough telegraph man. He is now and has for many years been superintendent of telegraph of the Union Pacific Railway, with headquarters at Omaha, Neb.

There was not much to amuse the young man coming from the larger centers in Omaha and after a year's sojourn in the then frontier town on the Missouri, most of the operators whose names I have mentioned took up their line of march toward the golden west, some locating at Cheyenne, some at Salt Lake City and a few going to Virginia City and San Francisco, at which points I will speak of them at another time.

About this time we had at Cheyenne, Wyo., the following force: N. M. Snyder, manager, now deceased; V. DuComb Green, Geo. W. Jones, bearing the sobriquet of "Nip," given him because of his proclivity to nip or clip off his words in key transmission, and W. A. Williams, operators. "Comb" Green holds a responsible position with the Bell Telephone Company in Toledo. "Nip" Jones is a business man of Ogden, Utah, and W. A. Williams is a wealthy citizen of Seattle. Mr. Charles F. Annett, now manager of the Western Union Telegraph Company at New Haven, Conn., was at the time mentioned manager of the Atlantic and Pacific Telegraph Company at Cheyenne.

There was a strong bond of friendship uniting the members of our little community which has lasted these many years and it will be a pleasure, no doubt, for them to read the names of their old colleagues once more in this retrospective glance.

How the Telegraph Operator Surprised the Actor.

O. L. Perry the Fort Wayne manager of the Western Union Telegraph Company for over thirty years, says the Indianapolis News, tells a story of Oliver Doud Byron, the veteran actor, who recently gave a dinner to a party of friends in New York, which reminded Perry of the incident.

"Byron," said Perry, "was playing in Fort Wayne in a piece that called for a telegram informing the operator away ahead of the express train to stop the train, loaded with gold, as bandits were waiting to hold it up. In a dramatic situation Byron as the hero operator at one point clicks the instrument, and there is a strenuous pause to know if the message arrived in time. I was selected to send the message that would tell Byron his warning had been given and the engineer had been notified.

"He knew nothing about telegraphy and what he clicked off had no meaning, of course. At the proper cue I clicked off the words: 'Byron, you may be a good actor, but you are a blame poor operator.'

"There was a tremendous outburst of applause over spots in the audience. It happened that there were a good many railroad men who knew the code in the audience, and when they heard the message they saw the point. It was a good while before Byron could proceed with the play without interruption, and he does not know yet what had caused the commotion."

The Roussel Printing Telegraph System.

The printing telegraph system invented by Willis J. Roussel, of New Orleans, briefly indicated in our issue of February 16, under the heading of Recent Telegraph Patents, is described by Mr. Roussel himself, as a device which consists in providing a transmitter with a keyboard similar to that of a typewriter, each key of which is connected to a rotary disk having contact plates upon the periphery of such lengths and so spaced apart as to indicate in the Morse alphabet the character designated upon the key connected therewith. These contact plates are electrically connected with one wire of the circuit, while a contact roller bears upon the periphery of the disk normally at a non-conducting point, and is electrically connected with the other wire of the circuit. It is therefore obvious that when the disk is revolved by depressing the key, all parts of the periphery will contact with the roller and the proper combination of dots and dashes will be promptly and quickly transmitted to the Morse receiver, where the signals will be printed in the Morse character, as the armature vibrates and the fountain thereon traces the dots and dashes on the tape which is being drawn through the sounder. It must also be said that the same transmitter is so constructed as to be able when desired to operate the typewriting receiver when necessary. This is accomplished by the application of a lever which throws the contact rollers in connection with another set of disks suitably constructed and placed in juxtaposition with the disks used to operate the Morse receiver. With the printing of telegrams in the ordinary letters, the operation is somewhat similar, although requiring a differently constructed receiver. This receiver is built on the principle of a typewriter which prints from a typewheel. The disks, as they are energized by the depression of a key on the transmitter, cause the armature to release the typewheel, and the motor travels the wheel the distances at which the various letters are brought into contact with the platen of the typewriter, and after the printing the letter it is mechanically returned to its original starting point. There is also a mechanism by which the paper is brought into alignment at the end of each line, as well as one for the spacing between the words and the changing of the line when completed. These instruments are combined to work either on a telegraph line or wireless circuit.

Orders, if sent to Telegraph Age, Book Department for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

The testimony of progressive operators is that TELEGRAPH AGE is so thoroughly comprehensive in character as to make it absolutely indispensable to those who would keep informed. Its technical articles are of high practical value. Write for a free sample copy.

The English Convention of Electrical Engineers.

The various national associations of electrical engineers of the world on invitation of the Institute of Electrical Engineers of England, will meet this year in convention in Great Britain. A sufficient number of these bodies, including the American Institute of Electrical Engineers, have already signified their intention to be present, thus insuring a large attendance. A general reception committee has been appointed, whose headquarters during the convention will be at the Hotel Cecil, Strand, London. The committee is made up as follows:

Chairman, John Gavey, C. B., engineer-in-chief of the English telegraphs; Earl of Crawford and Balcarres, K.T.; Lord Kelvin, O.M., G.C.V.O.; Lord Alverstone, G.C.M.G., Lord Chief Justice; Prof. W. Grylls Adams, F.R.S.; Prof. W. E. Ayrton, F.R.S.; F. Bailey, Prof. W. F. Barrett, F.R.S.; Sir John Wolfe Barry, K.C.B., F.R.S.; T. O. Callender, Albert Campbell, Sir Albert Cappel, K.C. I.E.; Major P. Cardew, R.E.; W. A. Chamen, G. von Chauvin, Col. R. E. Crompton, C.B.; Sir William Crookes, F. R. S.; H. H. Cunynghame, C.B.; S. Dobson, B. Drake, W. Duddle, H. Edmunds, R. S. Erskine, W. B. Esson, S. Evershed, Prof. J. A. Ewing, F.R.S.; A. L. C. Fell, S. C. de Ferranti, Prof. J. A. Fleming, F.R.S.; Prof. G. C. Foster, F.R.S.; E. Garcke, Frank Gill, Dr. R. T. Glazebrook, F.R.S.; Robert Kaye Gray, F. E. Gripper, Robert Hammond, H. E. Harrison, A. W. Heaviside, I.S.O.; J. S. Highfield, Col. R. Hippisley, R.E.; H. Hirst, Col. H. C. L. Holden, R.A., F.R.S.; J. H. Holmes, Dr. E. Hopkinson, Walter Judd, Prof. Gisbert Kapp, Sir Alex. B. W. Kennedy, F.R.S.; J. E. Kingsbury, Sir Oliver Lodge, F.R.S.; P. V. Luke, C.I.E.; Sir Henry Mance, C.I.E.; E. Manville, G. Marconi, LL.D.; T. Mather, F.R.S.; C. H. Merz, W. M. Mordey, A. B. Mountain, Dr. A. Muirhead, F.R.S.; J. M. Munro, Hon. C. A. Parsons, C.B., F.R.S.; W. H. Patchell, S. L. Pearce, Sir John Denison Pender, K.C.M.G.; Prof. John Perry, F.R.S.; Sir William Preece, K.C.B., F.R.S.; J. S. Raworth, J. H. Rider, M. F. Roberts, Mark Robinson, Prof. Sir A. Rucker, F.R.S.; R. P. Sellon, P. S. Sheardown, Alexander Siemens, Dane Sinclair, J. F. C. Snell, C. E. Spagnoletti, C. P. Sparks, A. Stroh, Sir J. Wilson Swan, F.R.S.; James Swinburne, A. A. C. Swinton, Herbert Taylor, Prof. S. P. Thompson, F.R.S.; Dr. W. M. Thornton, A. P. Trotter, J. C. Vaudrey, A. J. Walter, C. H. Wordingham, A. Wright.

The following members form the organizing committee:

Chairman, Robert Kaye Gray; J. Gavey, C.B., president; S. Z. de Ferranti, R. Hammond, J. S. Highfield, H. Hirst, Prof. G. Kapp, Sir H. C. Mance, C.I.E.; C. H. Merz, W. M. Mordey, A. B. Mountain, J. M. M. Munro, S. L. Pearce, Sir W. H. Preece, K.C.B., F.R.S.; P. S. Sheardown, A. Siemens, Prof. S. P. Thompson, F.R.S.; Dr. W. M. Thornton, J. C. Vaudrey, A. J. Walter.

A provisional programme has been arranged, of which the following is an outline:

June 23 and 24. Central Committee Rooms at the Hotel Cecil will be open for registration of visitors and members. June 25—Afternoon, a visit to the National Physical Laboratory may be arranged, to attend the ceremony of opening the new Electro-Technical Laboratory. In the evening, reception and banquet at the Hotel Cecil. June 26—Visits to the general post office, power and electric lighting stations, railway and tramway power stations, engineering works, telephone exchanges, and other undertakings and places of interest. In the evening, conversazione at the Natural History Museum. June 27—Excursion up the Thames and visit to Windsor. June 28—Leave London for Birmingham district. The programme will include visits to works in and near Birmingham, including Rugby and Stafford. Arrive Manchester in the evening. June 29—Manchester district: Visits to electricity stations and works in Manchester, Salford and the neighborhood. Conversazione at the Town Hall in the evening. June 30—Proceed to Liverpool. Visits to electricity stations, works and railway. Leave in the afternoon for the Lake District (Windermere). July 1—Excursions in the Lake District. Proceed to Glasgow in the evening. July 2—Glasgow district. Visits to works and reception by Lord Kelvin. July 3—Visits and excursions in the neighborhood of Glasgow. July 4—Leave Glasgow for Edinburgh. In the afternoon leave Edinburgh for Newcastle. July 5—Newcastle district. Visits to works and power station. July 6—Leave Newcastle for Leeds. Visits to works and excursions in the neighborhood of Leeds. July 7—Leave Leeds for London. Entertainment will be provided in London and local centers for the ladies of the party and those of their friends who desire to accompany them.

The Telegraph Tree.

There are many plants which display an ingenuity in gaining food or in attacking their enemies which would seem to indicate a surprising degree of intelligence. Since plants are rooted to their places, they are naturally greatly handicapped, but many of them have surprising compensation. There is, for example, the telegraph plant, of India, which has a method all its own for catching the sunshine. Each of its leaves is composed of three leaflets. The larger terminal one erects itself during the day and turns sharply down at night, while the other two smaller leaflets move constantly, day and night, describing complete circles with a peculiar jerking motion like the second hand of a watch. Occasionally they rest for a period and then go on again, thus bringing every part of every leaf to the full action of the sunlight.

TELEGRAPH AGE should go regularly to every one interested in the telegraph. Write for a sample copy.

"Lifted" His Scalp.

"Please write and tell me how the scalp which old Black Thunder, the Sioux chief, tore off my head forty years ago is getting along," is the contents of a letter which the curator of the Omaha public library has just received from William Thompson, who now lives in Kingston, England, but who lost his scalp to the Sioux Indians and lives to tell of it.

Thompson's scalp has been one of the curiosities of the Omaha public library museum for the last twenty or thirty years, and every year, just after the holidays, Thompson writes to the curator, asking after his scalp.

"I still take a great interest in that little piece of skin and hair," he wrote last year.

Thompson is one of the few men in the world who have been scalped and yet lived to tell of it. And when Thompson left the field on which he was thought to have been slain he brought his scalp away with him, but instead of wearing it on his head it was stuffed in his pocket.

And not only was Thompson scalped once, but on two times did he lose a portion of his brown hair to the Indians—twice within half an hour.

Thompson was a telegraph lineman in the early days of the Union Pacific railroad, and, together with three other linemen, was one day sent out to repair a break somewhere west of Kearney, Neb. This was in the fall of 1866, when the country was full of Indians.

Thompson and his companions went out on a handcar, and when the break was located Thompson climbed to the top of a telegraph pole to repair the broken wire.

His companions went down the road a few poles to make other repairs, and suddenly Thompson heard a rifle shot and an Indian war-whoop. Looking down the road he saw his three fellow linemen pumping for life, the handcar making good speed eastward, while at the foot of the pole on which he was perched stood a grinning Indian brave, with a dozen more to back him up. The surprise had been complete, the Indians crawling up under the cover of the long grass and getting within tomahawk distance before they were discovered.

"Paleface come down," grunted the Indian.

Thompson refused to obey, and without hesitation the Indian at the foot of the pole promptly fired a bullet at his head. The shot took effect and Thompson came tumbling to the ground, where he had the good sense to feign death, although only slightly wounded by the glancing bullet. But the wound in the head fooled the Indian.

Just at this moment Thompson's friends, seeing they had distanced the Indians, brought their handcar to a stop on the top of a distant grade, and as they looked back they saw a tall Indian standing erect, holding high in the air above his head a gory scalp, which he shook at them in a menacing manner.

"I hadn't more than hit ground," said Thomp-

son, relating his experience, "before that big Indian jumped on me, and running a knife around my scalplock, wrapped his fingers in my hair, gave a sudden jerk, and, with a yell, simply tore all the top of my head off. It felt like a red-hot piece of iron placed against my head, but I had sense enough and fortitude enough to keep still.

"I managed to get a look at that Indian, and saw him hang my scalp to his belt.

"But, horrors! A few minutes afterward another Indian came along and took another piece of my hair, although the first one had got the choicest piece.

"There I remained on the ground, playing dead, for an hour or more, while the Indians piled obstructions on the railroad track. Then along came a freight train, ran right into the obstructions, and was wrecked. The Indians killed the train crew and set the box cars on fire. In one car were several barrels of whisky and all the Indians got rip roaring drunk and had a big war dance around the burning train.

"During the dance I saw Black Thunder drop my scalp from his belt, and after nightfall, when there was no light other than from the moon, I put it in my pocket, crawled into the high grass, and, circling around until I struck the railroad track, I 'hit' the trail for all I was worth.

"About daylight the next day I saw a train coming from toward Omaha, I flagged it and found it was a train of soldiers going after the Indians. The linemen had reported my death. They put me on the train and the surgeons got hold of me, tying my head up in all sorts of bandages."

But Thompson had enough of America, and soon afterward he went back to England, taking his scalp along as a memento of his life on the plains.

After he had been away from Nebraska eight or ten years he sent his little scalp back to the Omaha public library, with a letter telling them to keep it as a curiosity.

Preserve Your Papers.

By taking a little trouble, when **TELEGRAPH AGE** first comes to hand, it may be preserved to form a permanent and valuable addition to the reading matter of a kind which all telegraphers should be supplied. We furnish a neat and attractive cloth board binder, which will be sent by mail, prepaid, for \$1.00. It has good, strong covers, on which the name **TELEGRAPH AGE** is stamped in gold, and means by which each issue may be securely held as in a bound book. One binder may thus be made serviceable for a number of years, and when successive volumes, as they are completed, are bound in permanent form, the subscriber ultimately finds himself, for a moderate cost, in possession of a most valuable addition to his library, embracing a wide variety of telegraph, electrical and general information.

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of **TELEGRAPH AGE**, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

John E. Wright, Expert Telegraph Inventor.

John Edward Wright, the well-known old-time telegraph expert and inventor, a reference to whose printing telegraph system appears in another column, was born in Whitehall, N. Y., October 8, 1848. He moved to Canada when but a child and learned telegraphy at Sherbrooke, on the Grand Trunk Railway, in 1861. Afterwards he worked at Portland, Me., Boston and New York, until the fall of 1864 when he returned to Canada. In 1865 he again went to Boston, remaining there until the winter of 1869-70 in the Western Union employ, filling the position of night manager during the last two years. He then went to New Orleans, returning to New York in 1872 temporarily to the old Atlantic Cable room at 145 Broadway, soon afterwards becoming manager of the New York office of the Automatic Telegraph Company. This was a small experimental company, with one wire between New York and Washington, which



JOHN E. WRIGHT.

had been put up for the purpose of demonstrating the value and practicability of a then new system of chemical automatic telegraphy. Thomas A. Edison was the company's electrician, E. H. Johnson was the superintendent and Patrick B. Delany was the Washington manager, so that if the company's facilities were limited there was no lack of talent behind its efforts. The automatic system proved so efficient that Mr. Edison took it to England in the spring of 1873, Mr. Wright accompanying him as assistant. Mr. Edison returned to New York in a short time, but Mr. Wright remained in England for six years working out various experiments in connection with long cable circuits, the chief result of which was the production of the well-known Brown and Allen relay. Mr. Brown was Mr. Wright's assistant; Mr. Allen was a civil engineer in the same employ as were Wright and Brown. Mr. Wright was in Algeria when the patents

for the relay were filed, hence the name Brown and Allen. In 1878 Mr. Wright returned to the United States and went to work for the New York Associated Press in Washington under the management of Walter P. Phillips, working the leased wire, the first ever rented in this country for press purposes. At the end of a year he was transferred to the New York end of this then famous press circuit and in a short time became assistant to George A. Leech, who was night manager.

The Mutual Union Telegraph Company was organized in 1880 and Mr. Wright was made its electrician. He remained with this company until August, 1882. In March, 1883, he went with The United Press, which was then being reorganized by W. P. Phillips. He remained as manager of the New York office of this concern until 1887 when he went to England and organized its first London bureau.

During the following two years Mr. Wright brought out his first page ticker. The "Column Printing Company" was organized in London to exploit this device and a large number of these tickers were installed in that city, where they are still working most successfully. These were the first page tickers placed commercially before the public. Mr. Wright in 1889 resigned his United Press position and returned to New York, and from that time until the present he has devoted himself entirely to the improvement of this form of printing telegraphs.

In 1889 a company was formed with headquarters at Cleveland, Ohio, for the purpose of putting Mr. Wright's inventions into commercial use. This company has plants running in Chicago, Pittsburg and Milwaukee. The Wright tape ticker is virtually the official ticker of the Chicago Board of Trade. It is also used by the Pittsburg Stock Exchange. A Wright page ticker has been in use since 1893 by the Agence Havas, Paris, France, and has always given reliable and satisfactory service. All these tickers, however, were limited in speed to twenty-two to twenty-five words a minute. Mr. Wright's latest device, which gives veritable typewriting by wire, has moved completely away from the limitations imposed by low speed and difficulty of transmission.

A copy has been received by TELEGRAPH AGE with the compliments of the author, of the printed address of John Gavey, engineer-in-chief of the British telegraph system, recently delivered before the Institution of Electrical Engineers, England, of which body he is president. Voluminous excerpts from this address have already been printed in these columns. The fresh copy now at hand is amplified by a page of curves showing the growth of the telegraph plant maintained by the General Post Office in Great Britain between 1880 and 1905. This shows a most satisfactory increase as well as the mileage of underground wire taken into use during the last three years.

Book Notices.

The "A B C of the Telephone" is a book valuable to all persons interested in this ever-increasing industry. No expense has been spared by the publishers, or pains by the author, in making this the most comprehensive handbook ever brought out relating to the telephone. The volume contains 375 pages, 268 illustrations and diagrams; it is handsomely bound in black vellum cloth, and is a generously good book without reference to cost or price. Orders and remittances (price \$1.00, express prepaid), should be made to J. B. Taltavall, Publisher Telegraph Age, 253 Broadway, New York.

Wireless Telegraphy and Telephony, by Prof. Domenico Mazzotto, translated by S. R. Bottone, is the title of a new work, the object of which is to present to the readers in as simple a form as possible the principles on which the wireless system of signaling is founded, and to describe the apparatus required. It also follows step by step the progress of different inventors who have revised wireless systems, and it traces chronologically the progress made in wireless telegraphy from the first experiments of Marconi at Bologna to the last results of transatlantic wireless signaling. It contains 416 pages and 253 illustrations; price \$2.50, express charges prepaid. Orders should be addressed to J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

"Telegraphy" is the title of a book which gives a detailed exposition of the telegraph system of the British post office, the author being T. E. Herbert, A.M., engineer of the English telegraphs. It embodies a description of the telegraph practice of Great Britain, which is full of interest. Land telegraphy, its systems and apparatus, and the construction of underground lines, are elements of telegraphy alone considered, submarine and wireless telegraphy not being touched upon. To this general consideration of the subject, twenty chapters are devoted, two additional chapters treating respectively of the construction of aerial lines and of the construction of underground lines. Both will be read with special interest. A full description of the Murray automatic system, which has been adopted by the British Government, appears in the appendix, together with much other interesting matter. The comprehensiveness with which the author has handled his theme may be judged when it is said that the volume contains over 900 pages, the illustrations numbering over 500. The price of the book is \$3, including postage. Address all orders for the book to J. B. Taltavall, "Telegraph Age," 253 Broadway, New York.

No up-to-date telegrapher can afford to be without TELEGRAPH AGE. It furnishes him with information essential to his welfare. Send for a sample copy.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

ST. LOUIS, WESTERN UNION.

The telegraphers gave their third informal dance March 17. A musical programme was rendered and refreshments were served.

Mr. M. A. Hawley, Wheatstone chief, has gone to Toledo, Ohio, there to install repeaters for the Barclay printing telegraph system.

"The Telegraph Clerks' Aid Society" reports three members as being disabled—Frank Sassenrath, Stewart Dunbar and Charles Chenot.

J. J. Lane, assistant chief operator, has gone on a vacation for a few months.

Arthur Mitchell, Jr.; has left here to work in the Chicago office.

E. Powers, city chief, is absent on a vacation.

PHILADELPHIA, WESTERN UNION.

Arthur Saylor, who had a severe attack of measles, has again returned to duty looking none the worse for his illness.

J. H. Edwards has resigned to take a position with this company in New York.

The Aid Society's progressive euchre, banquet and dance will take place April 18 and not April 8, as has been erroneously stated.

BALTIMORE, WESTERN UNION.

On Sunday morning, March 25, we moved from our temporary quarters in the old Hoen building, to the new office on the ninth floor of the Equitable Building, just six days sooner than was expected. This was due to hard work on the part of the electricians and foreman in charge. No one would have known there was a change of offices, as everything was done so quickly and systematically.

This office is a decided improvement as to location, space and artificial light, and one of the best equipped in the large chain of offices of the Western Union Telegraph Company and the best that has ever existed in Baltimore.

Williard Drake, of the night force, is off for a month to attend to some personal business.

One of the most important bills before the Maryland Senate is the railroad telegraphers' eight-hour bill, which, if passed, will bring joy to every railroad telegraph operator in the state of Maryland.

PHILADELPHIA, POSTAL.

Mr. Leo Miller, who has been absent about ten months on a trip around the world, received a most hearty welcome recently on his return, and is now filling his former position at the Commercial Exchange.

The sympathy of the force is extended to All-Night Manager William J. Poppert and Manager Thomas R. Poppert, of the "Ledger" office, because of the death of their father which occurred March 15. Messrs. Baker, Locke, Redding and Lenahan represented the Postal at the funeral.

That operators, too, are sometimes careless and apparently indifferent about a mother's anxiety was manifested the other day when Mrs. Maurer called on Traffic Chief George Dunn and begged for information concerning her son, R. S. Maurer, who left this office about two years ago, from whom since then she has not heard a word.

Quite on the contrary to the above everybody is invited to rejoice with Robert C. Macredy, of the Commercial Exchange office, who is elated over the fact of having been made a "grandpop."

Owing to the fact of a gratifying increase in business, Manager James Wilson, of the Bourse office, wears a smile of corresponding proportion.

NEW YORK.

WESTERN UNION TELEGRAPH COMPANY

My Motto—Honorable Dealing.

D. A. Mahoney, 253 Broadway, New York. New and remodeled typewriters, all makes. I make a specialty of **factory rebuilt** Remington and Smith machines, from \$35.00 upward. Special representative for the sale of The Mecograph, the most perfect of sending machines. Correspondence invited.

EXECUTIVE OFFICES.

Mr. William Holmes, superintendent of tariffs, accompanied by his daughter, is spending a brief vacation in Florida.

Mr. Theodore P. Cook, of Chicago, general superintendent, accompanied by his private secretary, Mr. M. T. Cook, were in the city last week on business connected with the service.

Mr. Frank Jaynes, general superintendent of the company at San Francisco, Cal., is in the city on a business trip. Mr. Jaynes was accompanied by his wife.

Mr. Jacob Levin, general superintendent of the Southern division of the company, with headquarters at Atlanta, Ga., is also in the city.

Mr. Theodore P. Cook, general superintendent, and L. McKissick, electrician, at Chicago, accompanied by George J. Frankel, superintendent at St. Louis, Mo., have recently finished a tour of inspection through Arkansas and adjoining states with the object of improving the telegraph service which will begin at once at several points.

Mr. T. J. Meade, assistant chief operator at Albany, N. Y., was a recent visitor.

The headquarters of Mr. F. E. Clary, superintendent, will be changed from Hartford, Conn., to New Haven on May 1.

Mr. J. Emerson Lessig has been appointed manager at Pottstown, Pa.

IN THE OPERATING DEPARTMENT.

Mr. C. H. Ward, formerly of the Western Union cable staff at Canso, N. S., has been added to the force at the Central cable office at 16 Broad street.

The following changes have been made in the force here: Mr. C. H. Lawrence from Southern traffic, nights, to the Barclay printing department, days; Mr. J. J. Wilkinson, quadruplex department, nights, to Southern traffic, nights; Mr. F. W. Streeter, Long Island traffic, nights, to quadruplex department, nights.

Mr. J. H. Montgomery, of the New Jersey division, met with an accident recently in the Erie depot on his way home, falling and breaking his arm. He is reported to be improving.

Mr. S. G. Calhoun, formerly operator in this department and later private operator to Mr. Jay Gould, and afterwards with the firm of Washington E. Conner and Company, died at his residence in Brooklyn on March 23. His illness, pneumonia, was of but two days' duration.

On May 1 this company will open a new modern and fully equipped branch office at the corner of Wall and Water streets to take the place of the two branch offices now located in the same vicinity.

OTHER NEW YORK ITEMS.

At the retirement of T. C. Eipper recently, as manager of the Western Union Telegraph Company office at the Produce Exchange, New York, a position he had filled most acceptably for twenty-three years, he was presented by a number of operators and employees of the Exchange with a gold watch, suitably inscribed, the same being tendered as a testimonial of their esteem. Secretary Andrews of the Produce Exchange in behalf of that body also presented Mr. Eipper with a leather album in which was engrossed a letter testifying to his faithful service and courtesy, expressing regret at his leaving and wishing him success. It was signed by over one hundred and fifty firms and members of the Exchange, headed by the president.

Mr. John Brant, secretary of the Old-Time Telegraphers' and Historical Association, is still absent from his office owing to continued illness.

The National Telautograph Company have met with much success in placing their instruments among New York City business firms. The telautograph is employed to connect various departments, similar to the telephone private exchange system, written records are made of communications in a manner better meeting the requirements of business, it is said, than does the telephone.

Assessment No. 447 has been levied by the Telegraphers' Mutual Benefit Association to meet

the claims arising from the deaths of Robert A. Taylor at Terre Haute, Ind.; Edward P. Cauet at Chicago, Ill.; Charles S. H. Small at Passaic, N. J.; John T. Petty at Dallas, Texas, and William J. Byrne at Pittsburg, Pa.

The spring dinner of the Magnetic Club, announced to be held at the Hotel Astor, Broadway and Forty-fourth street, on the evening of Tuesday, April 17, promises to be a fine affair and a numerous attendance is looked for.

THE NEW YORK TELEGRAPHERS' AID SOCIETY ELECTION.

At the annual election of the New York Telegraphers' Aid Society, held on March 27, the following ticket was elected: J. C. Watts, president; H. C. Worthen, vice-president; Thomas M. Brennan, treasurer; C. A. Kilfoyle, financial secretary; W. B. Purcell, recording secretary; Miss S. Dougherty, A. J. Gillman, R. J. Marrin, W. W. Price, Miss M. E. Saunders, M. F. O'Neill, E. F. Howell, G. W. Logan, J. F. Ahearn, W. E. Rath, T. J. Smith, executive committee; J. H. Driscoll, F. D. Murphy, W. T. Rogers, auditing committee.

The annual statement of the New York Telegraphers' Aid Society for the year ended March 6, 1906, and which was presented at the annual meeting, held March 28, is as follows:

Balance on hand March 6, 1905.....	\$18,113.00
Receipts	7,737.81

Total	\$25,850.81
-------------	-------------

Disbursements	\$6,438.21
Balance on hand March 6, 1906.....	19,412.60

Total	\$25,850.81
-------------	-------------

RELIEF FUND.

Balance on hand March 6, 1905.....	\$4,497.99
Receipts	751.22

Total	\$5,249.21
-------------	------------

Disbursements	\$682.20
Balance on hand March 6, 1906.....	4,567.01

Total	\$5,249.21
-------------	------------

BALANCES.

Aid Society..	\$19,412.60	On deposit..	\$23,918.61
Relief Fund..	4,567.01	Cash on hand	61.00

Total	\$23,979.61	Total	\$23,979.61
-------------	-------------	-------------	-------------

J. H. Driscoll, F. D. Murphy, W. T. Rogers, Auditors.

Slight amendments to the constitution were made.

The election of James Clayton Watts as president of the New York Telegraphers' Aid Society advances the vice-president to the head of that organization. This is a deserved recognition, for Mr. Watts is well qualified to assume the higher office, his affiliation for many years with benevolent and insurance associations peculiarly fitting

him to fill the position. Mr. Watts is the all night chief in the quadruplex department of the Western Union Telegraph Company, New York, and is held in high esteem by his associates. He is a Canadian by birth, having been born at St. Stephen, N. B., in 1856. He has been in the



JAMES CLAYTON WATTS.

Who has Been Elected President of the New York Telegraphers' Aid Society.

telegraph service since 1874, and a resident of New York since 1884. His home is in the Bath Beach section, Brooklyn, where with his family, in the house which he owns, he lives the pleasant life of a thoroughly domestic man.

POSTAL TELEGRAPH-CABLE COMPANY.

D. A. Mahoney, 253 Broadway, New York. Typewriters sold and rented. Special representative for sale of The Mecograph; time payments accepted. Correspondence invited.

EXECUTIVE OFFICES.

Mr. G. H. Groce, superintendent of telegraph of the Illinois Central Railroad Company, Chicago, was a recent visitor.

Mr. S. M. English, of Dallas, Tex., general manager of the Postal Telegraph-Cable Company of Texas, was a visitor to the executive offices on March 27. He was accompanied by Judge L. McLaurin, of Dallas, counsel for his company.

Superintendent W. P. S. Hawk, of Salt Lake, Utah, is in Chicago on business connected with the service.

IN THE OPERATING DEPARTMENT.

D. F. Mallen, assistant night manager, has been promoted to be night manager, in place of J. J. Whalen, who has been appointed assistant to F. F. Norton, day manager.

C. J. McCarthy, all-night chief, has been made assistant night manager, and J. B. Rex, Western

day traffic chief, has been assigned to the all-night chiefship.

These changes were the result of the advancement of Manager Charles Shirley to be superintendent in place of G. W. Blanchard, resigned to go into other business.

Joseph Nurnberg, of the service department, has been transferred to the 20 Broad street office, where he has been assigned to similar work.

The resignations include, S. Daig, W. O'Neil, E. C. Bailey, E. Flanigan, Miss C. Holmes, M. La Marsch, M. McDonald, W. W. Dier and T. F. Gallagher, the latter two to go to broker offices.

Business Notice.

Mr. D. A. Mahoney, whose advertisements as a dealer in typewriters have appeared frequently in TELEGRAPH AGE, first at Philadelphia and afterwards in this city, will again take up his former business and makes the announcement under the respective heads of New York Western Union and Postal News. He has been appointed as the special representative of the Mecograph telegraphic transmitter, manufactured by the Mecograph Company of Cleveland. He is prepared to furnish these instruments on a basis of easy payments, and invites correspondence on the subject.

We are in receipt from J. H. Bunnell and Company, Limited, the well-known manufacturers of telegraphic apparatus, of 20 Park place, New York, of one of their double speed telegraph keys which are now being put on the market. This key, together with a beautiful aluminum lever sounder mounted on the same base, has been placed on our desk. The key has double contact points with a sidewise rocking motion and as a consequence requires but one-half the movements of the ordinary key in its manipulation. It may therefore be regarded as a labor-saving device, while at the same time it is said to be by reason of the lateral motion of the lever a preventive of operator's cramp. Two things are certain: First, that the handling of this key can be acquired after a few hours' practice; and, second, the saving in labor of acquiring facility in its manipulation is a most important factor to the individual operator.

Recent New York Visitors.

Mr. Robert L. Dean, president and chief engineer of the Dean Rapid Page Printing Telegraph Company, Kansas City, Mo.

Mr. H. J. Pettingill, vice-president of the Northwestern Telephone Exchange Company, Minneapolis, Minn., and formerly superintendent of the Postal Telegraph-Cable Company at Boston, Mass.

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Quebec, Que.

(Communicated.)

Quebec, from an historical standpoint, is probably the most famous city in Canada. Located on the St. Lawrence River, it is an important shipping point and stopping place for the Atlantic liners. Only a few hours' ride from Montreal, it is reached by three great railways from the south, and will very soon have the advantage of still another great railway, the new transcontinental line—the Grand Trunk Pacific. The site of the city is probably the most picturesque in Canada. The business houses are mostly located in "Lower Town" on the flats and side hills at the foot of the cliffs. On the heights above is situated the residence section and on the plateau behind the city are the famous "Fields of Abraham." The citadel at the very highest point and commanding the St. Lawrence river, is a most important point of interest. Quebec is visited yearly by thousands to enjoy its winter sports, its scenery and the many fishing and hunting resorts nearby. In the center of the business section is the new "Telegraph Building," a three-story stone structure, the home of the Great North-Western Telegraph Company of Canada. Its telegraph facilities are unexcelled—a modern call box plant and direct wires to important Canadian and United States cities, as well as three Atlantic cable stations. From Quebec the Great North-Western Telegraph Company reaches upwards of 49,000 places in Canada, the United States and Mexico.

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Municipal Electricians.

The next annual convention of the International Association of Municipal Electricians will meet at New Haven, Conn., on Wednesday, Thursday and Friday, August 15, 16 and 17.

The Commercial Telegraphers' Union, Local 16, will hold its annual smoker and tournament at the Manhattan Lyceum, 66 East Fourth street, New York, on April 20 next. The affair promises to be a great success.

You can't afford to be without TELEGRAPH AGE.

[Advertising will be accepted to appear in this column at the rate of three cents a word, estimating nine words to the line.]

An anxious mother desires information concerning her absent son, R. S. Maurer, from whom nothing has been heard for two years. Address Mrs. E. Maurer, 3105 Page street, Philadelphia, Pa.

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Dallas is a city of substantial realities.

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The foundation of its greatness has been laid on broad, solid lines. Its present rapid development, phenomenal as it is, is not in any sense of the word a boom. It is merely the natural, substantial growth of an intensely practical, progressive city.

It is probable that no other community to-day presents such a favorable opportunity for the conservative investment of capital or intelligent effort as does the city of Dallas.

There is a positive demand for manufacturing establishments of various kinds: for jobbing houses, for public service corporations, and in the country surrounding—the famous black land belt—there are opportunities for farming, for truck gardening, for fruit and berry raising, for chicken and stock raising, unexcelled anywhere in the world.

The Hundred and Fifty Thousand Club of Dallas is an organization of progressive business men pledged to secure for the city a population of 150,000 within the next five years. It has gathered up a great deal of information as to definite opportunities that are now open for the conservative investment of capital and personal energy.

It will be glad to send this information to all who are interested.

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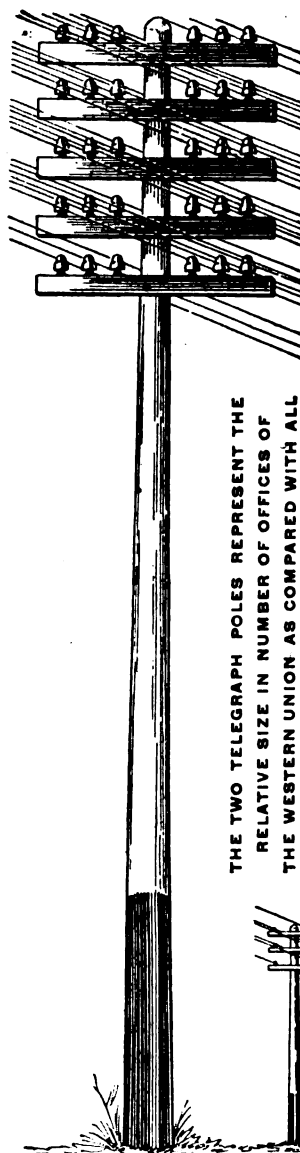
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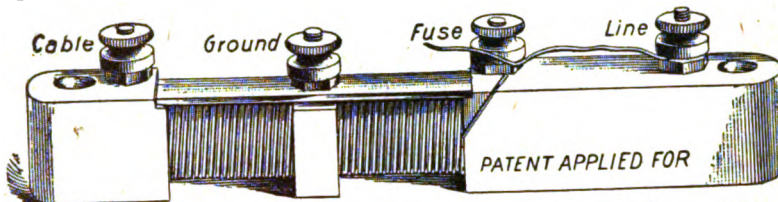
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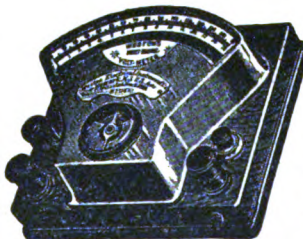
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ESTABLISHED
1883

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VOL. XXIV., No. 8.

NEW YORK, APRIL 16, 1906.

Whole No. 550.

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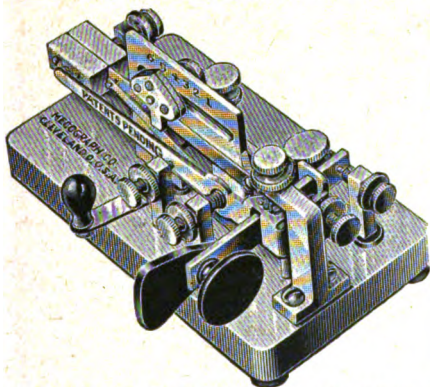
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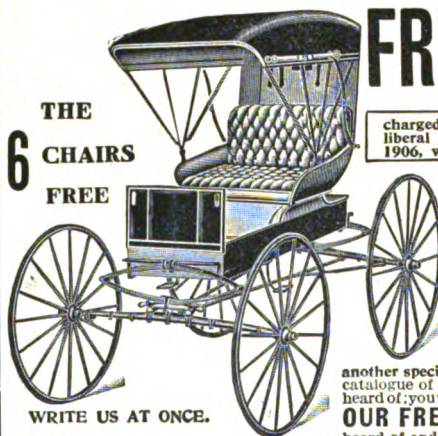
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TELEGRAPH AGE

No. 8.

NEW YORK, APRIL 16, 1906.

VOL. XXIV.

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SOME POINTS ON ELECTRICITY.

The Storage Battery.

Part III.

BY WILLIS H. JONES.

In charging or recharging a storage battery the connections must be made in such a manner that the polarity of the cell's electromotive force will oppose that of the charging current; that is to say, the positive electrode of the cell must be connected to the same or positive polarity of the charging main lead. Otherwise it would be in a position to give out current instead of accumulating electric energy in case it was not entirely exhausted.

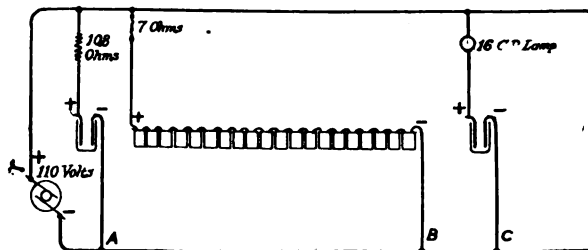
The charging electromotive force, of course, must be of a greater value than that of the cell, or series of cells, as the case may be, receiving current in order to overcome the electromotive force of the latter and force the excess of its energy through the storage battery.

As there is practically no internal resistance in the cell itself and but little in the office wires connecting the storage battery with the charging source, it evidently requires but a few volts in excess of the battery's back pressure of two volts per cell to do the work. Hence a low pressure is most economical for the purpose. Unfortunately, however, low voltage charging currents are not always available, and advantage must

be taken of such facilities as happen to be offered.

Usually the one hundred and ten-volt pressure of some electric light source is made use of for charging purposes. In this case it is first necessary to reduce the excessive pressure either by means of artificial resistance inserted in the charging leads or by connecting a sufficient number of cells together in series while receiving current to reduce the value of the charging electromotive force by means of the back pressure, two volts per cell, of the storage battery. The point to remember is that every unnecessary ohm of artificial resistance inserted in the charging circuit consumes a portion of energy uselessly, but which must be paid for just the same as if it was consumed in charging the battery.

To make this point clear to the reader, let us suppose that we wish to charge, first, one cell of battery at the rate of ten amperes current per hour from a one-hundred-and-ten-volt electric



light source. As the back pressure of the storage cell will reduce this pressure to one hundred and eight volts effective, it will require the insertion of 10.8 ohms artificial resistance in the lead. According to Ohm's law, $E \times C = W$, we find that the electrical energy expended in charging the cell at the rate of ten amperes per hour will be $10 \times 10.8 = 108$ watt-hours.

If we had reduced the charging pressure by means of the back pressure of several storage cells connected together in series, as shown in B in the diagram, the cost would have been greatly reduced. Thus twenty cells joined in series would reduce the one-hundred-and-ten-volt pressure to seventy volts effective. The insertion of but seven ohms artificial resistance would then be required to draw a charging current of ten amperes. The electric energy per hour thus expended in charging the entire twenty cells would then be but seventy watts, whereas one cell alone, arranged as in the illustration, would demand a one hundred and eight watt-hour rate.

The lesson to be learned from this is that every possible effort should be made to arrange a charging circuit in such a manner that the least amount of artificial resistance permissible shall be required to create the desired value of charging current. In each of the charging methods just described, the energy is, of course, bought outright, and whether employed usefully or otherwise the value of the amount taken represents the expense of charging the battery. It is possible, however, to charge storage batteries for practically nothing, or, to speak more accurately, without additional office expense. This is accomplished by utilizing electric currents originally arranged for and employed usefully doing other work, but which are harnessed and compelled to perform double service without extra compensation therefor. Thus a small cell of storage battery connected in series with one sixteen candle-power lamp, as shown at C in the diagram, may be charged at the rate of one half an ampere of current per hour, not only without additional expense, but the operation will actually reduce the office expense slightly for electric lights! Of course, it is assumed that the cell will only be connected for charging purposes during the period the lamp would otherwise be actually required in its legitimate capacity of furnishing light. The explanation lies in the fact that the back pressure of the storage cell reduces the current slightly in the lamp circuit but not sufficiently to cause a very noticeable decrease in the lamp's illuminating power.

The total amount of current and electric energy which that particular lamp and battery circuit will draw under these conditions must obviously be something less than that of the normal intake of forty-eight watts, owing to the two-volt reduction in the effective pressure. This reduction, of course, means a slightly reduced cash expense for maintaining that lamp, despite the fact that the current is doing double duty, but the slight monetary gain is offset by a proportional loss in the way of illumination. The latter loss, however, is so small that the diminution is barely noticeable.

For hotels, ticket offices, and other small branch telegraph stations using but one or two sounders, a small storage battery charged all night by this method would receive probably five or six amperes of current, as the strength of the current flowing through a sixteen candle-power incandescent lamp is just a little more than one-half ampere in volume. The cell would thus fill at the rate of one-half ampere per hour.

As the four-ohm sounders usually employed in connection with relays require but one-quarter of an ampere each, two such sounders could be fully energized for the same number of hours that was allowed in charging, even should the local circuits be closed during the entire period. When sounders are in operation, however, the local circuit is, of course, "open" about half the time, so that in reality the volume of current actually

used during, say, one hour, would be one-eighth instead of one-quarter of an ampere. The actual amount of current thus drawn from the cell must be estimated by subtracting the gain per hour due to the "open period" from the full hour closed circuit drain.

It has been demonstrated that one storage cell of battery will take care of three four-ohm sounders under ordinary working conditions, and require practically no attention after being properly charged and installed, other than to see that the evaporation of the fluid is compensated for by refilling the jar with a little water or acid when it falls too low.

(To be continued.)

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Fast and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadriplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, Inc., June 1 to July 16, Inc.; The Future Quadriplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, Inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, Inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadriplex Circuits, June 16; Electric Power from the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16; The Dynamo—Series, Shunt and Compound Wound, Feb. 1-16, March 1; The Storage Battery, March 16-April 1.]

Recent Telegraph Patents.

A patent, No. 814,852, for an electric sprinkler apparatus, has been issued to J. W. Larish, of Boston. An automatic alarm started off by incipient leakage in the sprinkler heads in buildings so equipped.

A patent, No. 815,809, for a telegraph key, has been obtained by John J. Ghegan, of Newark, N. J. A form of telegraph key having a spring lever supported to vibrate in a horizontal plane. The lever has a vertical flat disc for the engagement of the fingers.

A patent, No. 400,141, for a telegraphic transmitter, held by R. C. Stone, of New York, has expired.

Business Notices.

The Standard Underground Cable Company, of Pittsburg, and with numerous offices elsewhere throughout the country, has established still another new office to the chain, this time at Atlanta, Ga., in the Candler Building, of which Mr. C. A. Brown will have charge.

The Manufacturers' Advertising Bureau, of which Benjamin R. Western, who is well known

in the telegraph and electrical trades, is general manager, removed its offices on April 2 from 126 Liberty street to 237 Broadway.

Personal Mention.

Miss Jennye Creamer, the daughter of Mr. John M. Creamer, manager of the Western Union Telegraph Company, Baltimore, Md., will be married April 18 to Mr. Roy Anderson McCarty, of Pittsburg, Pa.

Mr. F. H. Knights, of the government telegraph department, Pretoria, South Africa, intends to visit the United States in June, while on a six months' leave of absence. This will be Mr. Knights' second trip to this country.

Mr. W. Boardman Reed, son of Henry A. Reed, of the Bishop Gutta-Percha Company, New York, has resigned his position of engineer of maintenance of way and buildings of the New York City Railway Company to take an active part in the management of the company of which his father is the head. The elder Mr. Reed is a well-known old timer and forty-niner of the telegraph, and was an intimate friend of Prof. Morse while the latter was a resident of Poughkeepsie, where Mr. Reed was manager of the telegraph office.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Colonel R. C. Clowry, president and general manager of the company, accompanied by Henry D. Estabrook, solicitor, and his wife, will sail for Europe on April 20, on the steamer Celtic, to be absent about six weeks, on a combined trip of business and pleasure. After a brief stay in England the party will cross to the Continent, and visit points in France, Germany and Switzerland.

Mr. Belvidere Brooks, general superintendent; Mr. G. F. Swortfeger, superintendent of construction; Mr. W. N. Fashbaugh, electrician of the Eastern division, and Mr. Gerald Brooks, secretary to the general superintendent, are absent on a trip of inspection covering that part of the Eastern division embraced in New York State, Pennsylvania, Maryland and the District of Columbia. Mr. Frank Jaynes, general superintendent of the Pacific division, San Francisco, Cal., and Charles Selden, superintendent of telegraph of the Baltimore and Ohio Railroad Company, Baltimore, Md., accompany the party.

Among the recent executive office visitors were Mr. D. R. Davies, superintendent of construction, Chicago; also Mr. C. R. Tilghman, of Cincinnati, Ohio, an attaché of the electrical engineer's office.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

Mr. William H. Baker, vice-president and general manager of the company, is in the South, whither he has gone on business.

Mr. Charles C. Adams, fourth vice-president,

is at his desk again, after an extended business trip to the Pacific coast, covering a period of six weeks, and in which he was accompanied by his wife.

Mr. Francis W. Jones, electrical engineer of the company, accompanied by his wife, has returned from a southern and western trip of about a month, undertaken mainly in the interests of the company, although two weeks of the time, devoted to social recreation, were passed at Palm Beach, Florida.

Miss Agnes C. Fagan, stenographer to Mr. John Doran, superintendent of the department of complaints and claims, and who is the eldest daughter of Mr. George F. Fagan, chief clerk of the executive office, has resigned her position and will be married on April 30 to Mr. Emmet Arthur Robbins, who is connected with the New York Herald.

The Cable.

Mr. Charles Adams-Randall, of New York, has an article in the current issue of Telephony, in which he discusses the subject of long ocean-cable telephony.

The annual report of the German Atlantic Telegraph Company shows a profit of nearly two million marks for the year. A dividend of six and one-half per cent. has been declared.

R. S. Yorke, a prominent English telegraph manager, died recently, aged forty-four years. At one time he was in the cable service and was an electrical engineer of some note.

Fanning Island, which is the mid-Pacific station for the all-British Pacific cable, and which was owned by British subjects, who became bankrupt, has, it is reported, been sold to the German government.

Max. Axelrod, Joseph Newsome and Paul Wienholz, of the Commercial Pacific Cable Company, San Francisco, Cal., have been transferred to Honolulu, while W. H. Grant, formerly of Manila, has been added to the San Francisco cable force.

The directors of the Mexican Telegraph Company have authorized the officers to arrange for increasing the capital stock of the company by \$1,000,000 to \$3,000,000, for the purpose of capitalizing earnings expended for the third Mexican Gulf cable, and other betterments acquired by the company to the extent of \$1,000,000. A shareholders' meeting will be held May 8 to approve the new stock issue as a dividend of 50 per cent. to shareholders of record at such time as may then be determined.

The laying of the cable between Guam and Japan by the converted cable steamer "Urmston Grange" for the Commercial Pacific Cable Company, is proceeding satisfactorily. The cable steamer "Silvertown," having paid out about 1,157 miles of cable from Manila, cut the cable and buoyed the end. She then proceeded to Woosung, where she trans-

ferred to a lighter the shore end, to be laid in the shallow waters of the Yangtse River, and she also transferred to a smaller ship, cable of an intermediate type to be laid between the shore end and the buoyed end of the main cable. The Silver-town herself is too cumbersome for inshore work. The final splice is expected momentarily.

Cable communication with the following places is interrupted:

Teneriffe since July 20, 1905.

Messages for Teneriffe and the Canary Islands may go "via France-Dakar."

Tangier since February 18, 1906.

Colon "via Jamaica" since Jan. 9, 1905.

Pinhelro "via Cayenne" since August

13, 1902.

Venezuela since January 12, 1906.

Messages for Venezuela may be mailed from Curacao or Trinidad.

Demerara since April 9, 1906.

Messages go from Trinidad by chartered or other vessels at frequent intervals.

Carl von Siemens, brother of the late Sir William Siemens and Dr. E. Wiener von Siemens, died in Mentone, France, on March 21. He was chairman of Messrs. Siemens Brothers and Co., the cable and electrical manufacturers, at the time of his death. The network of telegraph lines which covers Russia was constructed by Carl Siemens for the Russian government. He was personally in charge of the laying of the Direct United States cable, the first one contracted for by the firm of Siemens Brothers, and also was the first to succeed in fishing up the broken end of this same cable from the greatest depth of the north Atlantic. At the time of his death he was a partner in the firm of Siemens and Halske, of Berlin, St. Petersburg and Vienna.

An electrocapillary recorder has been devised by Orling for recording submarine cable signals, says the London Electrical Review. The instrument works on the principle of the well-known capillary electrometer. A light lever rests upon the top of the column of mercury, and when raised by the latter, tilts a little aluminum carrier suspended from a horizontal cord. The carrier supports a delicate siphon, the upper end of which dips into a bath of ink, while the lower end faces the tape, upon which the signal is recorded, the siphon being kept in slight vibration by a thread attached to a vibrator, consisting of a light spring arm bearing on a moving wheel with a serrated rim. The receiving circuit is completed between the two bodies of mercury through the electrolyte, into which dip the capillary tubes, and when a potential difference is established between the terminals, according to the well-known phenomenon, the mercury rises or falls in the capillaries, and, therefore, in the vertical tube.

The Direct United States Cable Company has moved its New York main office from No. 60 to 61 New street, a building which extends through to 42 Broadway. This structure is a fine up-to-date skyscraper, known as the "42 Broadway Building." In selecting this location the company has secured convenient and spacious quarters for its several departments all on one floor. The receiving department has a private entrance at 61 New street,

back of which comes the operating room, the messengers being accommodated in a room directly in the rear of these. Next comes an apartment reserved for filing purposes, and then there is the private office of Mr. Clement Lee, the superintendent. Adjoining are the several rooms devoted to the needs of the cashier, assistant cashier, and the bookkeeping department. Other space furnishes accommodation for the supply departments, etc. A private hall extends the entire length of the suite, running parallel with the main corridor of the structure, opening into which are a number of doors, thus affording direct and easy access to any one of the various offices without passing through any of the others. Singularly enough these new quarters are located in close proximity to the site at 40 Broadway, occupied by the company for many years prior to the removal of the old building to make room for the modern edifice which now takes its place.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. Charles Nabors has been appointed manager of the office at Uniontown, Pa., vice William Allison, resigned.

Mr. Thomas J. Meade, assistant chief operator in the office at Albany, N. Y., has been appointed chief operator at Buffalo, N. Y.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. H. S. Brasher, of Dallas, Tex., has been appointed manager at South McAlester, Indian Ty., vice O. L. West, transferred to Muskogee, Ind. Ty., in the same capacity.

Obituary.

W. S. McDermott, aged fifty-six years, for many years manager of the Western Union Telegraph Company at Kenosha, Wis., died at that point March 30.

Thomas Stenson, sixty-three years of age, one time manager of the Western Union Telegraph Company at Jamaica, L. I., died at that place March 23.

Charles G. Holland, aged sixty years, for forty years connected with the New York office of The Associated Press, and for twenty years its day manager, died March 26 at his home in New York.

John J. De Courcy, aged forty-one years, prior to January last, when he resigned to pursue other business, manager of the Postal Telegraph-Cable Company at Malden, Mass., met his death by accidental drowning March 20.

Don't borrow your neighbor's paper; subscribe for TELEGRAPH AGE. You can't afford to be without it.

General Mention.

The underground telegraph cable between London and Glasgow, England, was declared to be in working order on March 31.

Mr. Frank J. Ryan, a former Associated Press operator, and a resident of Kansas, is a candidate for the position of Secretary of State of Kansas, and it looks as though he might win the prize.

An official return relating to the English Post Office telegraph and telephone service in the year ended March 31, 1905, shows that the expenditure exceeded the total receipts by £987,739 10s. The total expenditure was £4,839,458 13s. 5½d.

Mr. C. E. Clayton, telegraph operator of the Chicago, Burlington and Quincy Railroad Company at Richards, Ill., has been advanced to the position of assistant car distributor at Aurora. He is succeeded at Richards by Miss Anna Steele.

All telegraph offices in the Western Union and Postal Telegraph-Cable systems have been instructed to place the letter x in the check of each message to which an answer is desired. When such a message is received at any office the delivery clerk will instruct the messenger boy to use every endeavor to obtain an answer.

Mr. W. B. Eddy, an old time telegrapher, now identified with the Hudson River Telephone Company, at Albany, N. Y., in a recent letter, renewing his subscription, writes: "I look forward to the receipt of TELEGRAPH AGE each issue with much pleasure. It seems like renewing acquaintance with a great many of my old telegraph friends."

Mr. C. J. H. Woodbury, of Boston, assistant engineer of the American Telephone and Telegraph Company, prefaced a recent address by remarking: "I know of no more promising field today where the technically educated young man can fulfill the true mission of the engineer as an economist, than in the development of the modern telephone system."

Mr. W. G. Phillips, now in the brokerage business at Cisco, Tex., in a recent letter explaining why he went into business for himself, writes: "I feel quite sure it was due to the encouragement I received from reading TELEGRAPH AGE. This stimulated me to make the endeavor to at least reach the top of my profession. My success was such as to inspire the necessary confidence which enabled me to successfully make this last venture, and I am not sorry I made the change."

The Railroad.

The Maine Central Railroad has recently installed the telephone system on its line.

The Union and Southern Pacific Railroads have ordered 2,000 telephones to equip an Independent long distance line which they have decided to build

from Omaha, Neb., to San Francisco, Cal. The line will be used by trainmen and officials. Telephones will be put in at every blind siding as well as in every town.

The Association of Railway Telegraph Superintendents will meet this year at Denver, Col., on June 20, and will make the Adams Hotel in that city its headquarters. From present indications there will be a large attendance, for the meeting promises to be one of special interest, many important topics coming up for consideration.

Arrangements are being made by the Grand Trunk Railway Company, Canada, for a long distance telephone installation of their own over their entire system. The central exchange will be at the general offices of the company, Montreal, where the switchboard, with all the necessary terminal facilities, will be erected, and the wires will run from Montreal to Portland, Me., on the one hand and from Montreal to Chicago on the other.

Wireless Telegraphy.

The stockholders of the Marconi Wireless Telegraph Company of America will hold their annual meeting at No. 15 Exchange place, Jersey City, April 16.

Mr. William Marconi, who was to lecture before the New York Electrical Society at Columbia University, New York, on April 4, on the subject of wireless telegraphy, was unable to appear because of illness which prevented him from leaving England.

For \$55,000 the Navy Department, through the Bureau of Equipment, agreed March 23 to purchase five wireless telegraph stations on the Gulf of Mexico, erected and equipped by the DeForest company in the last year and a half. Under the contract the company provided the equipment of the stations and put them in a working condition. They are located at Pensacola, Key West, Guantanamo, San Juan, P. R., and Colon.

At Los Angeles, Cal., on March 21, the receiving operator at the local station of a wireless telegraph company, although several blocks distant from the Santa Fe Railroad offices, heard the Santa Fe operator calling "Vg," which is the telegraph call for Las Vegas, N. M. The wireless operator attuned his instrument and then heard and took down portions of a lengthy message regarding Santa Fe business. Later in the day the same operator caught the replies being sent from Las Vegas. The wireless operator then called up the Santa Fe offices and verified the messages which he had received. There is no connection of any sort between the office of the Santa Fe and the wireless company, excepting the ordinary telephone connections, which are in no way joined with the telegraph instruments of either office.

On Wednesday night, March 28, according to the statements of employees and officers of the De Forest wireless telegraph system, 572 words were

flashed across the Atlantic Ocean, from Coney Island to the coast of Ireland, a distance of 3,200 miles. For several nights the Coney Island station had been sending messages across the ocean, and these messages had been received in large part by the operators in Ireland. Wednesday night, however, marked the maximum of achievement. On that night a total of 1,000 words was sent out from the Coney Island station. The messages were sent in various keys, pitches or tunes in order to ascertain the correct one. Ireland reported by cable Thursday morning that 572 of these words were received and recorded. As yet no messages have been sent from Ireland to Coney Island, the transmitting apparatus not yet being in place on the other side of the ocean. A cable dispatch from London, April 3, denies that any such message as stated above was received in Ireland.

Experiments were conducted at Dr. Graham Bell's kite station in Virginia, on March 27, with a view of determining whether kites may be used in place of masts for wireless telegraph stations where the conditions make the use of masts impracticable. The experiments were made through an arrangement between Dr. Bell and a wireless telegraph company, and were in every way successful. In the course of the experiments messages were sent from Washington and received through a kite flying at a height of 500 feet. A wire was suspended from the kite and in one experiment the messages were received through the human body. One man held the wire and the message passed through him and through still another man who held the receiver. The kite caught a message that was being sent from the steamship Bermudian of the Quebec steamship company, lying at her pier in New York city, to the De Forest company offices, and another message being sent from the station at Galilee, N. J., to a ship at sea.

Lieutenant-Commander S. S. Robison, United States Navy, recently told of the work of the Navy Department in wireless telegraphy. The department now, he said, has about thirty-five land stations working, and about fifty stations aboard ships. Plans are being made for still more. Several years ago, he said, a board was appointed to consider the question, and gave its development to the Navy Department, with an order to construct a chain of stations along the Atlantic and Pacific coasts of the United States, in the canal zone and the Philippine Islands, and providing ships with the apparatus. That work has been partially accomplished. On the Atlantic coast there are stations at Portland, Me.; Portsmouth, Boston, Cape Cod, Newport, Montauk, New York navy yard, Navesink, Annapolis, Washington, Cape Henry, Norfolk, Diamond Shoals Point, Charleston, St. Augustine, Key West, Pensacola, Cuba, Porto Rico, New Orleans and Colon. On the Pacific Coast there are stations at San Diego, near Santa Barbara, Farallone Islands, off the Golden Gate; Goat Island, in San Francisco Bay; Mare Island. Three or four others are to be built further north. There is one at Hono-

lulu, one on the island of Guam, and another at Cavite, in the Philippines. Others are designed, so that the commander of the Pacific squadron can always be in touch with his ships on the ocean. Tests made by the department so far demonstrate several things of a peculiar nature. Messages can be transmitted better at night than in the daytime; better over water than over land, and better over land with long waves than with short waves. In tests made between Key West and Colon, about 1,060 miles, communications were carried on at night, but not in the daytime, and the same results were obtained between Key West and San Juan, Porto Rico. The longest distance over which ships have communicated at night is 1,200 miles. The present aim, he said, is reliable communication, night or day, at 200 miles.

Municipal Electricians.

The eleventh annual convention of the International Association of Municipal Electricians will be held at New Haven, Conn., August 15, 16 and 17. At this meeting the following papers will be presented and discussed: "History of the Fire Alarm and Police Telegraph," "Details of Certain Auxiliaries to Fire Alarm Apparatus," "Advisability of Protecting Municipal Electricians by the Civil Service Laws," "Comparison of Underground and Overhead Wiring, and of the Relative Values of Single, Rubber-Covered Wire and Lead-Encased Cable for Underground Construction," and "Conditions Surrounding the Inspection of wires in the Southwest."

In addition to these papers, the "Question Box" will be a feature at this meeting. To the end that it may be made of special interest, members are requested, if they have any questions that they would like to have explained, to send them to the secretary, who will assign them to some one who is competent to answer them fully. It may seem to some that the question they desire to propound is a simple one, but it is urged that no hesitation may be felt on that account, for the point raised may be of importance in its bearing on the conditions existing in some other part of the country.

The secretary of the association, Frank P. Foster, of Corning, N. Y., asks those who are eligible, but whose names are not enrolled as members, why they are not so entered. He will furnish application blanks and information to all who may require the same, and urges correspondence on the subject.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

If you are not familiar with TELEGRAPH AGE, a postal card request will bring a sample copy to your address.

The Invention of the Telephone.

(Concluded from page 151, issue of April 1.)

It was after this that Bell resigned his position at Boston University and Watson his position in Williams' shop, and together they fitted up a laboratory in the boarding house in Exeter place. There, on March 10, 1876, after meeting and overcoming many perplexities and discouragements, they had the pleasure—it seemed that, and nothing more, to the young enthusiasts—of being the principals in the transmission of the first telephone message. They were experimenting, as usual, to produce something more than a mere drone or suggestion of human speech. Suddenly, in faint but distinct tones, came the message—the first intelligible words ever transmitted by electricity: "Mr. Watson . . . Come here . . . I want you."

Commonplace enough, but epochal! Doubtless if Bell had been sure of success that afternoon he would have been prepared to say something worthier of the occasion. But he was not prepared. Some slight improvement in the instruments, or it may have been some added expertness in the use of them just made the difference between indistinctness and distinctness.

Thereafter, the development of the telephone was rapid, so rapid, indeed, that in a few months it was possible to converse fluently between the two rooms. In June, Mr. Bell brought his invention into public notice for the first time by exhibiting it at the Centennial in Philadelphia. The effect produced by this exhibition may be gauged by the report made by Lord Kelvin (then Sir William Thompson): "With my ear pressed against this disk I heard it speak distinctly several sentences, first all simple monosyllables 'To be or not to be' (marvelously distinct); afterwards sentences from a newspaper. . . . I need hardly say that I was astonished and delighted. So were others, including some other judges of our group, who witnessed the experiments and verified transmission of speech. This, perhaps the greatest marvel hitherto achieved by the electric telegraph, has been obtained by appliances of quite a homespun and rudimentary character."

It certainly was a crude device, that first telephone, compared with the compact and convenient apparatus that stands to-day on the business man's desk; yet it served its purpose—it transmitted articulate speech. The question that remained was, how far could speech be transmitted?

On October 9, 1876, came the grand experiment. Until then, Bell and Watson had confined themselves to sending messages back and forth between their rooms in Exeter place. Now they were to try "long distance" telephoning in earnest over the two-mile telegraph wire of the Walworth Manufacturing Company, which ran from the office in Kilby street to the factory at Cambridge. Bell took charge of the Boston station and Watson of the other. At a given signal Watson disconnected his telegraph instrument from

the circuit, connected his telephone and listened for Bell's voice. At first, all he could hear was an incoherent murmur, and the gloomy thought occurred to him that perhaps the telegraph wire would not serve their purpose. (In their Exeter place experiments they had used small wires, much like those attached to the telephone of to-day; and these wires, by the way, are now in Mr. Watson's possession.) The instruments and their connections were carefully readjusted; but again there was no suggestion of speech. It was a critical moment. As a last resort Watson thought he would examine the wires at his station, and on going into an adjoining room he found a high resistance telegraph relay in the circuit. Cutting this out, he hurried back to the telephone and listened. The relay was the sole cause of the trouble, for now Mr. Watson heard Bell's voice clearly; and, as he says himself, "we found that we could talk with perfect ease although we were two miles apart."

Some doubt had been expressed whether the telephone, even though it were a practical idea, could transmit messages as accurately as the telegraph, and so Bell and Watson had previously arranged to report their first long-distance conversation. Later, when they compared notes, they found that, as they had hoped, the telephone had done its work perfectly.

Mr. Watson relates that, on his way back to Boston, he could scarcely refrain from telling the other passengers in the car that he had just been talking by telephone with a man in Boston. Fortunately he was able to keep the news to himself. They might have given him over to a policeman as an escaped lunatic. An hour or so later, when Bell reached Exeter place, he grasped his associate by the shoulders, wheeled him around the room, and shouted in an ecstasy of joy, "Watson, this night's work will make me famous."

And it did. Early in 1877, Mr. Bell, Gardner Green Hubbard, of Cambridge (who later became his father-in-law), Thomas Sanders, of Salem, and Mr. Watson formed the first Bell Telephone Company. Here are some interesting extracts from the company's first circular, dated May, 1877:

The proprietors of the telephone, the invention of Alexander Graham Bell, for which patents have been issued by the United States and Great Britain, are now prepared to furnish telephones for the transmission of articulate speech through instruments not more than twenty miles apart. Conversation can be easily carried on after slight practice and with the occasional repetition of a word or sentence. On first listening to the telephone * * * the articulation seems to be indistinct; but after a few trials the ear becomes accustomed to the peculiar sounds and finds but little difficulty in understanding the words.

The advantages of the telephone over the telegraph for local business are: First, that no skilled operator is required, but direct communication may be had by speech without the intervention of a third person; second, that the communication is more rapid, the

average number of words transmitted a minute by Morse sounder being from fifteen to twenty, by telephone from one to two hundred; third, that no expense is required either for its operation, maintenance, or repair. It needs no battery, and has no complicated machinery. It is unsurpassed for economy and simplicity.

The company also announced that "telegraph lines would be constructed by the proprietors, if desired."

A few months later, Bell thought he would try to telephone from New York to Boston. The attempt was made under difficulties. First of all, the noise that had been raised o' nights when Watson was talking or singing for the entertainment of audiences gathered in nearby cities to see Bell's demonstration had somewhat strained the temper of the landlady of the Exeter place house, and, furthermore, the young men had not been in the habit of going out of their way to find her on rent day. Watson, who was to take charge of the local station in this experiment, realized that he must smother his cries (long distance telephony in those infant days being a matter of stentorian tone production), so he made a tent of blankets, and on this sizzling August night installed himself within. To preclude trouble at the New York end of the line (they used an Atlantic and Pacific telegraph wire) Bell had stowed himself and his apparatus in a closet in the telegraph office. As the result of this mid-summer night's performance, the young enthusiasts almost died of exhaustion. All for nothing. Long distance telephony, such as Americans are familiar with to-day, had to wait for the invention of hard drawn copper wire by Thomas B. Doolittle, one of the Bell engineers, before it became an unqualified success. Anyhow, that was virtually the end of the famous work at Exeter place. Those early days of the telephone were full of fiascos. Old Bostonians recall how a large assembly went to a hall in Back Bay to hear over the telephone a concert given in Providence by the then famous American Band, but, as the story-teller put it, "they didn't hear a thing."

The first Bell Company had a hard time of it. The public in general was disposed to regard the telephone as a toy. On the other hand, the telegraph men took it so seriously that they prepared to destroy their young competitors. At one time the clouds were so black that Bell and his associates offered to sell out, patents, property and all, to the Western Union Telegraph Company for \$100,000. Fortunately for them—as it turned out—the offer was rejected. The struggle went to the courts, and, in the still celebrated litigation, the Bell patents were sustained at every point.

What are Atoms, Electrons, and Ions?

The phenomena of the Crookes tube, of Roentgen rays, and latterly of radium, inexplicable by the chemical theories of a decade ago, have ren-

dered necessary the coining of several new words, which have taken their place in the vocabulary of the modern physicist. We hear so much these days of electrons and ions and their relation to the old-time supposedly indivisible atom that the time seems ripe for a few simple definitions condensed from a recent paper by Prof. Soddy.

The first and oldest conception of the ultimate unit of matter is the "atom," the smallest particle of an element capable of separate existence. The essential feature of Dalton's conception was that the atoms of the same element are all exactly alike in mass and every other property, but are recognizably different from the atoms of any other kind of element. The statement will be found in text-books of chemistry written long before the recent discoveries were foreshadowed, that if it is ever found possible to transmute any one kind of atom, that is, any one kind of elementary matter, into any other kind, there is little doubt that the same means would be sufficient to transmute or decompose the other elements.

The modern conception of the ultimate unit is the "electron," and this, although by origin an electrical conception, is in reality a material conception no less than the atom of matter. The electron could be defined as the smallest existence known capable of isolation and of free movement through space. It is a definite amount of "charge" of negative electricity, in a word, the smallest possible amount known to exist; for electricity, no less than matter, has been shown to consist of discrete particles or units, and not to occupy space continuously. Unlike the atoms of matter, only one kind of electron is known, consisting of the same amount or charge of negative electricity with identical properties in all its various manifestations.

It is certain that each atom of matter contains in the normal condition at least one electron, which it is capable of losing, and conversely that it may unite with at least one electron more than it normally possesses without deep-seated material change. An atom with one or more electrons less than it possesses in the normal state is positively charged and is often called a "positive ion." Similarly an atom with one or more electrons in excess is a "negative ion."

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NEW YORK, APRIL 16, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientage. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The electrification of steam railroads is going to impose on the telegraph and telephone companies an electrical problem that promises to be difficult of solution. The Western Union Telegraph Company, whose lines parallel the railroads to a large extent, will be the greatest sufferer from this new source of trouble, although the wires of both the Postal Telegraph-Cable Company and the American Telephone and Telegraph Company will be very largely within the high tension electrical zone, estimated to embrace all paralleling lines within reach of five miles.

Mr. Gardner Irving, who recently retired from the presidency of the New York Telegraphers' Aid Society, which he has held for two consecutive terms, in an admirable speech made on the occasion, dealing with the affairs of the society, called attention to a case where money is being paid for

disability, which is decidedly unique in the annals of this, or probably in those of any other, society of similar character. He referred to a young man who is confined in an asylum because of insanity, yet who is in perfect health bodily, and who may in the ordinary course of events, live to be an old man. He pointed out that if the non-compos lives twenty-five years more he will have had paid to him \$1,250, added to which the sum of \$300 already paid, a total amount of \$1,550. He also called attention to the fact that there would then be due another hundred dollars for burial. While of course this is an extreme case, it nevertheless possesses peculiar significance, and introduces a matter for which consideration was asked, to which end Mr. Irving urged the appointment of a committee.

A Boston Telegraphic Tournament.

Once again a telegraphic tournament, international in character, is to be undertaken, the event this time being scheduled to come off at Boston early in June. Much may be said in commendation of such an affair. It appeals strongly to the telegraphic mind, particularly to the young and aspiring element, for it affords an opportunity under conditions at once attractive in plan and scope for a competitive trial of skill and speed in telegraphing stimulated by the hope of gaining public approval and of the flattering prize award. As the Boston telegraphers, and the "Hub" shelters some of the very best within its corporate limits, appear to have resolutely set about to make their "meet" a success, Yankee grit will undoubtedly carry the day in this respect. Apart from the fact that the tournament is expected to attract the best telegraphic operating skill in the country, the further object is to raise sufficient money to pay a balance due on a bed endowment for telegraphers in one of the Boston hospitals, reasons sufficient to entitle the enterprise to the moral and practical aid of the telegraph companies. A correspondent in another column refers to the tournament at length.

The Invention of Printing Telegraph Systems.

The production of a successful automatic and printing telegraph system has fired the imagination and stirred the inventive genius of many. It has offered an attractive field for effort and experimentation in telegraphic procedure almost without parallel, and many really bright minds have been devoted to its study. Naturally the columns of TELEGRAPH AGE have been sought by inventors of such systems through which to describe their inventions and present their claims for recognition. The result has been that during the past few years considerable space has been surrendered to articles of this nature. As a telegraphic newspaper, independent in thought and deed, whose purpose it is to publish without bias all information pertaining to the telegraph, we have made it a rule never to curtail or abridge any proper statement made by inventors or others

in explaining or describing such systems of telegraphy in which they may have been interested in producing. The object has been to permit those who had worked out new methods in which at least some degree of merit appeared, any advantage that might accrue by its publication in a telegraphic journal whose pages are read by the managers of telegraphs the world over. These contributions were of value, inasmuch as they added to the general literature of the subject discussed, and frequently brought light and intelligent thought to the elucidation of a highly complex problem, even though failing to reach a correct solution of the same. The worth of the inventions described in some particulars have occasionally gained recognition to the extent that general managers of telegraphs have afforded facilities for a demonstration of the same in order that the sometimes specious claims advanced for the new systems might be subjected to careful tests, with a view of determining their commercial value, as distinct from any theoretical or laboratory estimate of worth, for the practical telegraphic executive is ever mindful of possible improvements in transmission.

Inventors in the field of printing and automatic telegraphy may rest assured that whatever the merits inherent in their systems—and some have developed truths in one direction and some in another—the same have not escaped notice, for the fact remains that all inventions of this nature, as described in these columns, have sooner or later received due consideration at the hands of telegraph officials both at home and abroad.

"Tattling" Operators.

Apropos of our criticism published in the issue of March 16 in answer to an editorial in the New York Tribune on "Tattling Operators," passing strictures on telegraph operators for sometimes supposed tattling propensities in disclosing the contents of telegrams, a prominent western telegraph manager had this to say in discussing the subject with a local newspaper:

"In all my thirty-seven years' experience in the telegraph service there has not been, to my knowledge, a single instance of any of our operators betraying the sacred trust reposed in him. The telegraph is secret, and the secrets in the messages entrusted to the company for transmission are as sacredly guarded as any loyal member of any secret organization guards that knowledge he has given his pledge to preserve. Operators are given to understand it is one of their most important duties to keep from the ears of the outside world the contents of the thousands of messages that pass through their hands daily. There are perhaps no other men who carry more secrets, and keep them, too, than the great army of telegraph operators. It is tacitly understood that the secrecy of the telegraph is inviolate, and we have had no trouble on that score.

"I will acknowledge, however, that some very peculiar things have occurred which have fre-

quently made it look as if an operator had betrayed his trust. A careful investigation, coupled with some clever detective work, has in each of this kind of cases with which I am familiar, resulted in locating the 'leaks' outside of the office.

"Frequently newspaper men cause suspicion to fall upon our operators. I recall an instance where a reporter 'queried' a paper in a distant city on a story he thought he had exclusively. Another paper got wind of the story, after the query had been sent, which made it look very much like we were guilty of a betrayal of trust. We immediately started an investigation, and it did not take very long to satisfy everybody concerned that the trouble was entirely outside our office.

"All messages, no matter who sends them—the millionaire or the pauper, the clergyman or the criminal—all are guarded with an equal sacredness to preserve the secrecy of their contents."

Underground Telegraph Wires.

The completion of the underground connection between London and Scotland marks an epoch in the history of English telegraphy. The business of the country, as well as the preservation of rapid private communication, is no longer completely at the mercy of a furious gale which has periodically blown down the aerial wires and cut the telegraphic communication between the metropolis and distant industrial towns, sometimes isolating Scotland and Ireland for many days at a time.

The main difficulties in the way of providing this underground system have been—first, the cost, which is enormous; and second, certain electrical obstacles, which are even more grave and troublesome than the financial one. Germany was the first to attempt to overcome the troubles of broken communication by a subterranean system when, in the early seventies, such a means of communication was established between the principal cities of the empire and Berlin. France followed suit in 1879, as the result of a great storm that isolated Paris in 1875.

The cost of the French system up to date has been stated at many millions, but the engineers are of the opinion that the economies in maintenance more than counterbalance this enormous expenditure. It is asserted, for example, that the French underground lines have never had to be replaced to any large extent. With the improvements in construction that are now in use the limits of this durability should be exceeded.

It was because of many obstacles and electrical problems that the laying of underground lines in Great Britain has been so long delayed. But the completion of the line to Scotland gives ample scope for observation and experiment.

The new classified catalogue of books on the telegraph, telephone, wireless telegraphy, electricity, etc., published in TELEGRAPH AGE, may be had for the asking.

The Safer Ways of Crime.

The decision of the New York District Attorney's office to carry to the higher courts for re-determination the legal questions involved in one of the most famous of alleged recent "wire-tapping" cases—that of last February, in which John Felix was the victim—has some very interesting and important aspects. The sum of money lost in this case made it remarkable, as well as the elaborate preparations for the swindle. Felix was decoyed to a room which purported to be a branch telegraph office. After a talk with the supposed "manager," he was conducted to an office where bets were apparently being made on the New Orleans races. His new acquaintance at the "telegraph office" pretended to supply him with information by telephone as to winners ten minutes in advance of its transmission over the wires. After making one small bet and winning, he subsequently put up large sums on races following, aggregating \$50,000, according to his "tips," but was told that "the similarity of colors of the jockeys caused a mistake."

This extremely ingenious cheat belongs to a class with which the law as now interpreted finds it almost impossible to deal. As in the "green goods" and several other very intricate "games," the victim is himself contemplating an illegal act. "Green-goods men" and "wire-tappers" are arrested often enough, but are not even brought to trial unless there exist some special circumstances which put the offense in another category. The reason is to be found between the calf covers of the volumes of judicial decisions.

Thirty-six years ago, in June, 1870, a certain Charles C. Miller was approached by a stranger who declared that he was a police officer, and that he had a warrant for Miller's arrest. Miller tried to induce the supposed officer to let him off, and finally handed over his gold watch and a diamond ring. Afterwards he had the imposter, Henry McCord, arrested. The latter was tried at General Sessions and convicted, but the case being carried up, the Court of Appeals in a remarkable decision reversed the conviction.

The prosecutor, said the court, parted with his property as an inducement to a supposed officer to violate the law and his duties; and if in attempting to do this he has been defrauded, the law will not punish his confederate, although such confederate may have been instrumental in inducing the commission of the offense. Neither the law nor public policy designs the protection of rogues in their dealings with each other, nor to insure fair dealing and truthfulness as between each other in their dishonest practices. The design of the law is to protect those who, for some honest purpose, are induced upon false and fraudulent representations to give credit or to part with their property to another, and not to protect those who, for unworthy or illegal purposes, part with their goods.

Judge Peckham wrote a dissenting opinion in which he said:

This statute, it should be borne in mind, is not solely for the relief of the party defrauded. Its purpose is to

punish a public offense, to punish and prevent fraud, and to protect the weak and credulous. Where both parties to a civil suit are equally guilty of a felony, out of which the action arises, the law refuses its aid to either. It leaves them where it finds them. This rule has no application to criminal proceedings; the complainant is no party to that proceeding. The people are the party prosecuting, not the complainant. There is no ground for that rule in a criminal sense, and there is no such rule.

The Appellate Division in 1900, passing upon the conviction of a "green-goods" man, while it was guided by the decision in the McCord case, yet expressed an opinion not unlike Judge Peckham's:

We very much regret being compelled to reverse this conviction. Even if the prosecutor intended to deal in counterfeit money, it is no reason why the appellant should go unwhipped of justice. We venture to suggest that it might be wise for the Legislature to alter the rule laid down in *McCord v. The People* (supra). It is true that there is now in the Penal Code a provision for the punishment of these "green goods" offenders, but prosecution under it seems to be difficult, the only reported case that we know of having been unsuccessful, and that on account of technical defects. If the rule as to larceny by false pretense, and by trick or device, were made the same as the common-law rule that stealing property from a thief is the same crime as stealing from the true owner, we think this class of cases might be much more successfully dealt with. We know that a feeling prevails to some extent in the community that it is unjust that one offender should be punished and his co-offender obtain immunity. The feeling is absolutely unreasonable, where one offender is punished and another escapes, there may properly be a feeling of dissatisfaction, but the dissatisfaction should be not because one man is in prison, but because the other man is out.

Not only has the construction of the law as thus laid down encouraged swindlers along these lines, but it has actually led to the invention of new "games." The "wire-tapping" scheme itself is said, on good authority, to have been invented subsequent to the decision in the McCord case, and designed to come to a nicety within its protection. All that is necessary is to devise some sort of criminal conspiracy, persuade the victim to be a party to it, and there need be no fear of prison.

That a large portion of the public endorses the prevailing interpretation of the law is probably true. "He got exactly what was coming to him," is a common street-corner comment when some countryman has overreached himself in trying to buy counterfeit money or "beat the races." The victim deserves not a particle of sympathy from any one, but if the principle is to be accepted that crimes should be punished only when committed against persons themselves respectable, much more of our criminal law might as well be thrown away.—New York Evening Post.

The testimony of progressive operators is that TELEGRAPH AGE is so thoroughly comprehensive in character as to make it absolutely indispensable to those who would keep informed. Its technical articles are of high practical value. Write for a free sample copy.

Dr. L. M. Rheem Indulges in Reminiscence.

The reminiscent article referring to old telegraphic days at Omaha, contributed by J. W. Hayes, of Portland, Ore., and published in the April 1 issue, has stirred the memory of Dr. L. M. Rheem, a member of the force adverted to, who now resides at Minneapolis, Minn. The genial doctor, whose vivid recollection and fund of anecdote, casts abundant and pleasant illumination on the personnel of former days of Western telegraphy, in reply to our suggestion, makes a welcome contribution to the literature of the subject. He writes:

"When you suddenly ask a respectable and respected grandfather like myself to turn a flip-flop back through the evergreen aisles of thirty years, there to paint a picture of how we used to do it, you must remember that there is a limit to the old man's strength, and you must make allowance for the inroads of senility, and the magnifying power of a lens thirty years thick. In retrospect there come to me shades, shadows, spirits, faces, incidents and names in much profusion.

"In addition to those named by Mr. Hayes as working in the Western Union office, at Omaha, I recall the two W. H. Murphys, who, on account of the color of their hair, were known, respectively, as "Full" and "Half-rate" Murphy; McMeans, who was in Indiana somewhere the last I heard of him about twenty years ago; R. S. ("Bob") Hayes, now in the freight department of the Burlington road at Omaha; "Rod" Tyler, now in the milling business at Council Bluffs, Iowa; George Nail, who preceded Frank B. Knight as chief operator, and who is now working in the Omaha office; Ewing L. ("Dad") Armstrong, also now in the Omaha office; Charles B. Horton, bookkeeper, now superintendent of the third district at Omaha; Frank J. Burkley, check boy, who afterwards became one of the most finished operators in the West, later leaving the business to establish with his father and brother The Burkley Printing Company, which he is still successfully conducting. Then there were W. L. Reed, Barker, and Linton. Later on in this decade, 1870 to 1880, came Luke Fisher, Tom Curry, chief operator, both of whom I believe have passed away; "Con" Dwyer, also dead; W. B. Hibbard, superintendent, who moved the office from Salt Lake City, dead; Charley Moore, superintendent's clerk, now in Superintendent Horton's office; Frank Crittenton, night chief, who is now division chief in the Western Union office, Chicago; Perry Chamberlain, now in the Postal service, New York city; Edgar Allen, now a prominent and wealthy wholesale grocer of Omaha, and others whose names do not come to me.

"Leaving the Western Union and taking up the Atlantic and Pacific, and its twin brother, the Union Pacific, at Omaha, I remember that a few years previous to Mr. Hayes' advent in

Omaha the repeating office was in the Union Pacific headquarters, where Superintendent J. J. Dickey, L. H. Korty, "Jake" Tallman, who died recently in New York, and the writer made up the day force, "Jake" working the Chicago wire, I the Ogden wire west, while Korty looked after No. 1 Union Pacific, in addition to his clerical work and seeing that Jake and I got to the office on time in the morning, and kept our wires clear. If either of us wanted to go out 'just a minute,' which more often than otherwise meant 'just an hour,' Korty was the 'relief.' I knew then and know now that we used to impose on him in this way, and I want to say right here that I am truly sorry for my part in the imposition.

"This public acknowledgment ought to make Korty feel good, and I hope it will, for there never was and never will be a more accommodating, a more patient, a better friend, counselor and advisor to the operators than L. H. Korty, who deserves more than a simple acknowledgment.

"The night force as I remember it, consisted of 'Ed.' Dickinson, assistant despatcher, whose 'commercial' duty consisted of 'tending' a Wood's button repeater, for late press report. He is another good man for other things besides tending button repeaters; as every one knows he afterwards worked his way by sheer merit to the head of the Greater Union Pacific Railroad system, retiring recently from the road as its general manager. He is now the vice-president and general manager of the Kansas City, Mexico and Orient Railroad, and is to-day just the same 'Ed.' to his old friends as he was thirty-five years ago. I remember his telling me one night when we were speculating on what the future held in store for us, that if he could only get enough of a strangle hold on Fate to induce her to place him in a position where the salary would be one hundred and fifty dollars per month, that he would consider himself 'fixed.' I am satisfied now that he used the choke lock on Mrs. Fate, as he would work just about four to six minutes for that amount of money now, and from what people tell me he would be cheap at that.

"Then there was 'Ed.' Titus, another despatcher, who used to help out on Atlantic and Pacific business; he is now the proprietor of a large patent medicine business in Minneapolis. Just to illustrate the strictness with which lines of authority were drawn in those days, I want to tell you about Titus's dream. We had a sort of a split trick in the office that paid \$85 per month. I forget who worked it, but whoever it was decided to make a move, and left the place vacant. As Mrs. Korty and Mrs. Dickinson were both away on a visit, Korty proposed to Mr. Dickey that himself, Dickinson and I work the trick every third night, dividing the pay equally between us. Mr. Dickey, with his usual good nature, agreed to this, and we started in. I want to say that while this arrangement lasted, that

old repeater was the best tended repeater on record; it had what you might call a supersaturation of tending, as will be seen later. I, as the youngest and handsomest member of the triumvirate, took the trick the first night. Along about one o'clock in the morning I was sitting at the repeater table listening to the Chicago man paste San Francisco, and ruminating on the uncertainties of human life and whether marriage really was a failure or not (I was not married then, but I know now that it is not a failure), when my attention was attracted by a big clod of earth striking me between the shoulders with force enough to nearly knock the wind out of me. The clod had come through the open door at my back, but I could not find the party who threw it, although I made an extended search. I sat down again, and in a minute after I got another jolt. I then found that the throwers were the other two-thirds of the aggregation, who had just dropped round to help me out. They came in and assisted me until 'clear.' The precedent thus established demanded that on subsequent nights the unoccupied members of the trio should tend the man who tended the repeater. This precedent was never violated during the life of the arrangement.

"One night after we had turned the office over to Titus in our usual formal way about two o'clock, we started home. Some one of us had forgotten something, so we went back to get it. We found everything quiet, including Titus, who was sound asleep on one of the tables. It only took a minute and a little careful work to tie him fast to the table without waking him, which we did. Korty, who could imitate the sending of every operator on the despatcher's wire, went into the battery-room and opening the local circuit, began to call 'X,' the despatcher's signal, in a most frantic manner. We made a little noise, which awakened Titus, who made every effort to get loose, without succeeding. Korty then held a conversation between two offices, one of which was telling the other that a passenger train had gotten away from him and that a collision was inevitable unless he could catch 'X,' whom he had been after for over an hour. Titus began to yell for 'Pete,' the night-watchman, who finally came in and released him. He made one jump across the room, answering 'I I X' before he sat down. As the wire was quiet he, after waiting a moment, called up the calling office, which did not answer immediately. When he got the office he asked about the train, and was told that it had left on time and that there was nothing wrong. He asked why the operator had told the other office that he could not raise X, and what about the threatened collision. The operator stoutly denied having said anything of the kind, and further that the wire had been entirely quiet. Titus got up from the table, rubbed his eyes, scratched his head, looked at the clock and then called up the other office, which he

questioned on the same lines, with the same result.

"We were watching him through the window. The expression of his face was alone worth the price of admission. We left him to figure it out himself. The next day he came round to the office quite a while ahead of his usual time. He seemed to have something on his mind, which turned out to be a dream he had had during his daily siesta. He told us the dream, which was the occurrence of the previous night suitably toned to fit the occasion. We agreed with him that it was truly wonderful. It did not take long to publish the dream and Titus finally got the straight of it, which he took good naturedly. He is now a great student of psychological phenomena, and I believe that we gave him his first lesson.

"It is needless to say that you could not hire either Korty, Dickinson or myself to perpetrate a trick of that sort now for less than seven dollars, to be divided equally.

(To be continued.)

The Telharmonium.

If the telharmonium, the invention of Dr. Thaddeus Cahill, of Holyoke, Mass., as described in our previous issue, as its promoters predict, by reason of the ability to transmit its music over telegraph and telephone wires for distances practically without limit, a remarkable electrical achievement will have been accomplished.

The instrument combines in itself the musical power of all the known instruments. It does not, like the phonograph, reproduce music; it makes it and in an entirely new way. The operator plays upon a number of specially arranged dynamos, so connected to the keyboard, which is arranged like that on an organ, that the depression of any given note causes a current in the transmitting wires, which, in turn, produces vibrations in the receivers at the other end of the lines. The person who has the receiver at his ear, therefore, hears the note as if it were actually played instead of as if it had been reproduced.

Dr. Cahill claims for his invention that the combined harmonies that occur in orchestral pieces can be accurately produced by a single performer at the keyboard and transmitted over the wires.

The telharmonium is, of course, an exceedingly complicated and delicate instrument, and the one now in existence is said to have cost \$200,000. This great cost, however, is not considered a difficulty by the backers of this project for disseminating music broadcast over the country, because, it is pointed out, a single telharmonium will be able to supply between 7,000 and 10,000 subscribers.

Orders for books on telegraphy, wireless telegraphy, telephony, all electrical subjects, and for cable codes, will be filled by TELEGRAPH AGE on the day of receipt.

Looking Backward at Salt Lake City.

BY J. W. HAYES.

It was in 1878 and 1879 that the hegira from the Omaha office to Salt Lake City began. N. Courcay Burke was the first to arrive in Salt Lake, where his brother, M. J. Burke, afterwards and for many years American Consul at St. Thomas, Ontario, where he died a year ago, had preceded him. "Bif" Cook was the next arrival, and with him came Eddy J. Fullum, J. H. Largay and George MacMahon. Then followed Homer Grey, Thomas F. Kehoe and Samuel Kelly. A little later on came Edward Beecher, Joe Hurley and Robert Empey.

The rest of the force at Salt Lake at this time was John Henderson, manager, a very affable gentleman, who sought to make things as pleasant as he could for his employees; John Greer was chief operator, John and Alexander Morison, William Greer, C. H. White, Michael Conway, Walter Huey, Frank Brown, with the other contingency I mentioned, completed the office staff so far as my memory serves me. The office was run "wide open," but at no time was there ever any advantage taken of this fact. The two Morison boys went to New York about 1880 and I think are still there. Both were fine operators, and were not lacking in other accomplishments. William Greer was one of the finest senders on the Coast. He is now ranching in Santa Clara county and doing well.

John Greer entered a bank in Deadwood, Dakota, years ago, and now counts his money with seven figures. Michael Conway entered the railway service, and is probably still in the same employ. John Henderson went further west and worked as manager at several important points, finally returning to Portland, Ore., where he is still in the Western Union Telegraph Company's service.

I forgot to mention Ernest W. Emery, who was very much in evidence at the time of which I am writing. He was a great operator and a very companionable young man. He went East about 1879, and is now with The Associated Press in Washington, D.C., as manager of its telegraph department. Superintendent W. B. Hibbard, with Chief Clerk Charles Moore, had their offices on the same floor with the operating room, and both officials were much liked by all the employees. Charles Moore is with the Western Union Telegraph Company in Omaha, and Mr. Hibbard is now dead.

Among the visitors to Salt Lake about this time was Peter Rowe, formerly of Elko, Nevada, who spent a short time there, and then hied to Chicago, where he entered the telegraph service, afterwards achieving fame in the Illinois Legislature. His brother, John Rowe, passed through Salt Lake shortly afterwards, but I have lost track of him. He is smart enough, however, to fill any position to which

he may aspire. Another figure in Utah's metropolis was George E. Millar, who went to Pioche, to Austin and finally to San Francisco, where he became one of the best known commercial men on the Coast. Frank D. Giles, manager at Ogden, now assistant chief operator of the Western Union Telegraph Company's main office in New York, used to run down to Salt Lake occasionally to visit his old friends. C. H. White went East about 1880 and is now manager for the Western Union Telegraph Company at Adrian, Mich.

The Western Union employed but one man in Ogden, which was only a test station for their lines, but was the relay and transfer point for the Atlantic and Pacific Telegraph Company which operated the wires of the Union Pacific Railroad Company, transferring to those of the Central Pacific Railroad Company, now the Southern Pacific, and while the company was known as the Atlantic and Pacific through to the Coast, separate organizations were maintained and checks divided at Ogden. F. D. Giles was manager of the Atlantic and Pacific proper, or Eastern side, with A. B. Hilliker, E. A. Street and Mrs. A. L. Nichols as assistants. George F. Brown was manager of the Central Pacific side, with A. Bruckman and Sam Kimber as assistants. George F. Brown is, I believe, still connected with the Southern Pacific in Ogden. Bruckman is now in San Francisco with the Western Union, and Kimber was in the same city at last accounts, but not in the telegraph business, having retired upon the proceeds of his mining strike in Bodie, and is devoting his time to the collection of rents. Mrs. Nichols has retired, and resides with her son in Washington.

It was about 1880 that the Western Union moved its relay office from Salt Lake to Ogden, and early in 1881 F. D. Giles relieved Mr. Henderson as manager at Salt Lake.

A generation has passed since these young friends were in Salt Lake and vicinity, but each one as he looks backward will feel a pang of regret that the good old times have gone ne'er again to return. A more pleasant and agreeable lot of young men, congenial in every way, would no doubt be hard to find again, and it is pretty sure that one and all admit that their Salt Lake days were among the happiest of their lives.

Senator Dolliver of Iowa tells of a time when he was a school teacher in Ohio and knew two young fellows who between them looked after a small railroad station. One was "Billy" Van Horne and the other was "Charley" Hayes. The former became a telegraph operator, and before ten years was superintendent of the St. Paul road. Now he is Sir William Van Horne, made a baronet because of the wonderful ability he displayed in rescuing the Canadian Pacific from its moribund condition. Hayes is now head of the Southern Pacific.

International Telegraph Tournament at Boston.

BY S. F. SHIRLEY.

An international telegraph tournament is announced to be held in Boston on June 8. There will be the usual speed contests, including one innovation, namely, a "team match," something that has never before been attempted, and there will also be practical demonstrations of all telegraph ideas that can be worked out.

It is the intention of those having charge of this tournament to work out the problems in such a way that it will be as interesting to the public as to the telegrapher. It is an attempt to bring the telegraph closer to the people. Nearly every business in the world has its exposition or fair. They are nothing if not advertising ventures, held with the idea of exploiting their worth to the public. It is just this problem that will be attempted to be worked out at the Boston tournament—exploit the telegraph and bring it more prominently before the people.

It is impossible at this time to announce all of the classes. The "team match," the new idea, will consist of sending and receiving messages, practically a bonus contest. This offers an excellent opportunity for "pairs" to show their ability. Chief Operator F. B. Travis, of the Boston Postal, and Captain Thomas F. Clark, chief operator of the Boston Western Union, are already doing everything in their power to develop fast teams for this event, and advices received from New York indicate that at least one of the New York-Philadelphia teams will enter. There will also be press classes, broker classes, railroad contests, and a special class of contests for women.

Mr. Andrew Carnegie has donated a very handsome cup, to be known as the "Carnegie International Cup, for the Championship of the World." It is of solid silver and stands fifteen inches high with delicate etchings symbolic of the profession.

Mr. Clarence H. Mackay, president of the Postal Telegraph-Cable Company, has contributed four handsome cups as first and second prizes in a team match on message work. This gives a prize for the sending and receiving operator comprising the team making the best and second best records. Several cups and bowls for other events have also been donated.

Cash prizes will also be added for first, second and third winners in each event. Although the list of prizes has not been fully made up, it can be announced that it will aggregate over \$1,000.

The purpose of this tournament, aside from advertising the telegraph, is to create a fund to endow a free hospital bed, and in other ways to assist the members of the profession when necessity arises. The Boston operators now have a bed in the Carney Hospital on which about \$2,100 has been paid. It is the hope of those running this tournament that enough can be realized to pay off the balance of the \$5,000 necessary to acquire full ownership. This bed is held by an association of operators incorporated under the laws of Massachusetts, and is officered by some of the most substantial telegraphers

in the city. They also desire to create a fund that will enable them to do away with the subscription papers. While these subscription papers are a necessity, and are always met with as hearty a response as the telegraphers' means permit, there is no denying the fact that they are numerous, and a fund that can be drawn on in such cases is badly needed.

The list of gentlemen who have consented to act as a board of judges for the tournament include all the officials of both companies in Boston, former telegraphers now high in the newspaper ranks; Superintendents Forristall and Smith, of the Boston and Maine Railroad, as well as the most representative operators from the largest banking houses in Boston. Their names are a high endorsement of the tournament.

The gentlemen having charge of the tournament are: James J. McGarty, president; Charles F. Edney, vice-president; S. F. Shirley, secretary and P. T. Haggerty, treasurer. The executive committee consists of P. J. Stewart, Manchester, N. H.; P. J. Bell, Bangor, Me.; W. M. Laird, M. J. Reidy, C. A. Hart, Fred Dixon and Hon. James B. Clancy, Boston. Further particulars can be had by addressing the secretary, P. O. Box 1271, Boston, Mass.

A Growing Evil.

There seems to be a regrettable tendency among a class of so-called electricians to appropriate that which does not rightly belong to them, says "Electricity," of New York. We refer to certain men capable of stringing a wire and connecting up a bell who deliberately place the letters E. E. after their names, presumably with a view to instilling confidence into prospective clients.

If a man opens an office and hangs out an M. D. sign and has not the proper credentials to entitle him to mend broken limbs he is immediately prosecuted and stands a good chance of being sent to jail as an impostor. Why, then, should a man who has not earned the degree of E. E. be allowed to appropriate a title which does not belong to him and be allowed to practice in peace a profession of which he is in reality not a member?

As we all know it takes usually four years of hard study to possess these two little letters E. E., and why therefore should a man who has taken a correspondence school course or learned a few things electrical in a factory or shop be allowed to coolly appropriate the title without a word being raised in protest.

He is not only taking something which does not belong to him, but he is deceiving the public as well, and some leading scientific body, such as the American Institute of Electrical Engineers, should make it its business to look up and expose all such cases.

No up-to-date telegrapher can afford to be without TELEGRAPH AGE. It furnishes him with information essential to his welfare. Send for a sample copy.

Wire Ordinance in Minneapolis.

George T. Raymond, wire inspector of the city of Minneapolis, Minn., has drafted the following ordinance to govern the construction of overhead wires in that municipality:

Owners of existing overhead wires or underground conduits must file plans of the same with the city engineer within six months after the passage of the ordinance. Service wires must be properly insulated and line wires must be covered with weatherproof paint, and such wires shall not pass over roofs or under sidewalks except within the block where distribution pole is situated. No wires shall cross alleys or streets diagonally from distribution pole to buildings, but must span the space horizontally to buildings and follow wall surface of building up or down. All poles must bear name of owner, and on joint pole lines different companies must use separate crossarms, each arm to be painted a different color for purposes of identification. High-potential wires on roof fixtures must be differentiated from other wires by special insulation to signify that they are dangerous to human life. Wire network in congested districts to be eliminated by substituting underground conduits or aerial cables for groups of wires entering buildings from terminal poles. It is also the intent of the ordinance to compel wire companies to use striped special insulated coverings on high-potential wires. A penalty of a fine of from \$10 to \$100, or imprisonment not to exceed 90 days, is to be imposed for violations of the ordinance.

The Chicago and Milwaukee Telegraph Company

Editor TELEGRAPH AGE:

The misfortunes of the Chicago and Milwaukee Telegraph Company, the short independent line, connecting the exchanges of the two cities, and relying mainly upon its Board of Trade business for support, appear to multiply. The Associated Press, which has maintained a leased wire service over this line, on March 1 severed its relations with this company. As this move entails considerable financial loss, it cuts a big hole into the earnings of the concern. It is said that the management of the line, since it passed from the control of the receivership on November 1 last, has been far from satisfactory, the statement being made that it is not directed by a practical telegraph element; that apparatus and equipment generally has been allowed to deteriorate, and that the best use of what facilities were at their disposal have not properly been made use of.

It is peculiarly unfortunate that this once valuable property has been allowed to run down. For some time prior to January, 1905, when the company passed into the hands of a receiver, its business had been exceptionally good, thus showing, apparently, that under conservative management the property had value and was capable of holding its own even in the face of the oppo-

sition of the two big companies. How true this may be to-day, in view of the setback the company has received on account of its misfortunes, the recovery from which presents many difficulties, is a question. Certain it is, however, to overcome present unfortunate conditions wise management is imperative. If definite results for good are to be attained, attention should be directed to the proper maintenance of the aerial wires, and not diverted to any thought of submarine or underground construction, such as is said to be engaging some consideration.

A TELEGRAPH MAN.

Chicago, April 6.

An Unsatisfactory Earth Current.

Editor TELEGRAPH AGE:

The experience of the telegraph and telephone companies has developed the fact that it is impossible to get a satisfactory earth connection at Joplin, Mo. The difference of potential between an earth connection at Joplin and one at Kansas City varies between 10 and 25 volts, and between Joplin and St. Louis 10 to 35 volts, causing decided fluctuations in current strength on wires worked to a battery at Joplin. Apparently the soil there is so impregnated with lead and zinc ores, that the return wires of the electric light and trolley leads charge the earth in much the same way as if it were an immense plate of a storage battery cell, and a higher earth current is given out there than from any other point of which I have heard.

It was necessary to run a wire two miles out of town to a creek in order to obtain an approximately good ground, and even then there was an earth current of 5 to 10 volts encountered.

"G."

St. Louis, Mo., April 5.

Directory of Annual Meetings.

Association of Railway Telegraph Superintendents meets at Denver, Colo., June 20, 1906.

Commercial Cable Company meets the first Monday in March, at New York.

Gold and Stock Life Insurance Association meets the third Monday in January, at New York.

Great North Western Telegraph Company meets the fourth Thursday in September, at Toronto, Ont.

International Association of Municipal Electricians meets at New Haven, Conn., on August 15, 16 and 17, 1906.

Magnetic Club, business meeting, meets the second Thursday in January, at New York.

Old Time Telegraphers' and Historical Association meets at Washington, D. C., October 9, 10, 11, 1906.

Postal Telegraph-Cable Company meets the fourth Tuesday in February, at New York.

Telegraphers' Mutual Benefit Association meets the third Wednesday in November, at New York.

Train Despatchers' Association meets at Buffalo, N. Y., in June, 1906.

The stockholders of the Western Union Telegraph Company meet the second Wednesday in October, at New York; election of officers occurs on the third Wednesday in October.

No operator should fail to read TELEGRAPH AGE regularly. It will pay him to do so.

Messenger Boy Law.

A decision affecting the rights of persons employing district messenger boys was handed down April 6 by the Appellate Division, New York. Under it the court holds that the company furnishing the messengers is not responsible for any mistake, loss or misfeasance by the boy.

Morris J. Hirsch sued the American District Telegraph Company, as assignee of Joseph S. Jantzen, on a claim for \$500. The case was tried in the Municipal Court. Hirsch got a verdict for the full amount, which was subsequently affirmed by the Appellate Term. The Appellate Division now reverses this and orders a new trial.

Jantzen, it appeared, in January, 1904, had occasion to send \$500 in cash to the Rutherford National Bank at Rutherford, N. J. He went to the telegraph company's office and asked for a messenger, telling the man in charge that he wanted a trustworthy, careful boy, as the envelope contained \$500. There were no boys present, but in a few minutes the chief of the boys, known as "sergeant," came in, and the operator recommended him to Jantzen.

The messenger went off with the envelope, but the money never reached the bank. What became of it or the boy is not known. Jantzen demanded the money from the company and didn't get it. He assigned his claim to Hirsch, who sued on the theory that the company had contracted to deliver the money by its messenger boy and was therefore liable.

In its opinion the Appellate Division, through Justice Ingraham, says that what the defendant actually undertook to do was to furnish a messenger, and a failure of the messenger to perform the service required was not a breach of contract.

The court, which is unanimous, also finds that the company cannot be held liable on the theory that it was the employer of the messenger and therefore responsible for his negligence or misfeasance. The only question is whether there was a special agreement that the company would undertake to deliver the money as Jantzen wanted it delivered, and the court says there is no proof of any such agreement. The company is merely a general employer, furnishing servants to those who need them for particular work and cannot be held as the direct employer of the messengers. Nor is it a common carrier, says the court, which would make it liable for such losses.

The decision will be appealed.

The Operator and the Adobe Collision.

A writer in the Railroad Gazette, who signs himself "Ex-Telegrapher," has this to say in extenuation of the blunder of the operator on the Denver and Rio Grande Railroad, whose neglect, it has been charged, caused the recent frightful disaster on that road:

"After perusing the editorial in the Railroad Gazette of March 23, the casual reader would be

led to believe that this operator who slept while No. 3 passed Swallows, was a moral derelict who deliberately made himself comfortable, took a good nap and upon awakening was so criminally indifferent to his responsibilities that he told the despatcher that No. 3 had not passed when he knew that there was a possibility if not a probability that it had passed while he was asleep. Thus far there has been no evidence to show that this operator's previous record was not good. Until such evidence is forthcoming it would seem that he should be entitled to a little more charity. There is no one who realizes the awful responsibility which is upon him more than the operator himself—if he is old enough and has had the experience which one in such a position should have. Anyone who has experienced the terrible feeling which a railroad man has (though it be but for an instant) when he erroneously believes he has made a terrible mistake, will never take any chances which might make that state of mind permanent. The shock to the nervous system is something awful and indescribable. It is no wonder that some of the best of railroad employees have become violently insane soon after making such a mistake. An old conductor once said: 'A man suffers the tortures of a thousand deaths in trying to keep awake while doubling the road at night.' This operator was 'doubling' at the time of this wreck. Any operator who has ever done this at night will tell you that it is quite possible for one to go to sleep sitting bolt upright at his sounder, sleep several minutes and awaken again without realizing that he has been asleep at all. It is quite possible that this was the case with the operator in question, as there was a snow storm at the time, which would do a great deal towards muffling the noise of the slowly moving No. 3."

Government Telegraph Line Will Be Sold.

Bids have been asked for by Lieutenant J. S. McCleery, chief signal officer of the department of the Colorado, for the sale of seventy-three miles of government telegraph line between Price and Mytton. This line has not been used since the building of the Utah road from Mack to Dragon, Utah. Prior to the opening of this railroad the government hauled its supplies over the wagon road from Price to Fort Duchesne and built the telegraph line at that time. The distance from Price to Duchesne by wagon road is eighty miles. The distance over the Mack-Dragon railroad is sixty-four miles. All government stores are now diverted via the railroad, which also has a telegraph line to Duchesne. As a result there appears to be no use for the old military telegraph line from Price to the fort in question.

TELEGRAPH AGE is the only telegraphic newspaper published in America. It is up to date, covering its field thoroughly, and no telegraph official or operator, can afford to be without it.

Perfect Phillips' Code.

BY GEORGE W. CONKLING.

I submit herewith a specimen of Phillips' Code contractions. The matter is in its original phraseology, which appeared as a recent editorial in the New York "Sun," excepting a few substitutions. It should be considered by those familiar with the subject, an unusually fine example, being almost wholly made up of one-word abbreviations, and to lovers of good receiving code, this will appeal strongly.

With an intelligent sender, matter of this sort can be transmitted at the rate of fifty-five words per minute, with but very little effort, and at the same time reduce the strain on the receiver to a minimum.

Two, three and four-word contractions are very popular among code operators, but they should not be used in the midst of numerous one-word abbreviations, as they tend to demoralize the receiver for an instant, or until he can "line up" on increased speed.

The intent of Mr. Phillips was to give a system of abbreviations to the sending operator which would net certain results with the least possible effort on the part of the sender. I am sorry to admit that some operators use the code the same as spelled-out matter—disregarding all pretense at judgment or space. It is a fact that a general complaint is heard among operators to the effect that but very few have ever taken the pains to learn how to discriminate against obscure and confusing abbreviations. This fault is bad enough, but when coupled with a failure to space uniformly it becomes positively irritating and produces nothing but breaks and worry.

To attain perfection in the transmission of Phillips' Code, to my mind, is the pinnacle of the telegraph profession and operators should look upon it as something more than merely memorizing a score of abbreviations, similar to a school-boy's spelling lesson.

There has also been a tendency of late to introduce all kinds of "mongrel" code, in fact, anything which can be abbreviated phonetically. This may have been Mr. Phillips' idea, but where do we put the peg in? There should be some rule to govern transmission, because if this loose method continues indiscriminately, it is safe to say that it is only a question of time when we will have no code. My friends, especially Mr. A. P. Velie, the reviser of the present book, will, I think, agree with me that the present list of contractions is sufficient and should be followed faithfully.

In conclusion, I would say that the specimen attached hereto represents substantially the arrangement of abbreviations for transmission, omitting nothing except the first word of a sentence, spelling out words which have no abbreviations and using "n" for words ending with "tion"

and "g" for words ending with "ing," which is one of the unwritten laws.

One f ms intg dypms d pl history f ex US is t skm in var stas to el ex Sars bl dl pop vo.

The lpc o sh a cng mst crny be cddr a rvy mvm bc f xtv alteratns wh wb efd d fjn o ou gvt. ad ts bcm ad xty d cou.

The six y term o ex Sars wl, oko, wrk aga a ex Sa eld pcy bl pop vo fm bemg a pop bdy slm to t cxs Hu of Reps. There w also b sarl tdn, es cms to cal w, bt it wb lkd tt a ex Sa wos mems ad b eld geny, as crn ex Sars r nw, wd b a dft ex Sa fm tt knpd bl t fjr o ts gvt eat mkrs f ex Xn. It wd b a ex Sa wos eln one f xnl cks upn ral es qk pop actn hdb abnd. es b less f ck upn t ex Hu wh lw intended to b.

These cdrns r, hvr, ntg nu. They hrb tkn up es dsd wnv it hb ppod to amd t ex Xn ftp o chug ex Sars bl pop vo. The intg fac ls nw tt in sm stas t xnl pvn ft eln o ex Sars bl xgrs wl bcm a fvh wheel d gvt coach.

Mems o ex Cgs rptg und cv emns o eno cap wo krp xgn lfo thr adhts wl cmb aga ay emt to t crpns, bt cujx es dtmd efo qpt peo f sq stas wiefy dms ay oen.

One of the most interesting developments in the political history of the United States is the scheme in various states to elect Senators by direct popular vote. The importance of such a change must certainly be considered a revolutionary movement because of the extensive alterations which will be effected in the foundation of our government, should this become adopted extensively in the country. The six-year term of Senators will, of course, work against a Senate elected practically by popular vote from becoming a popular body similar to the House of Representatives. There will also be senatorial tradition, and customs to calculate with, but it will be indicated that a Senate whose members should be elected generally, as certain Senators are now, would be a different Senate from that contemplated by the founders of this government, and the makers of the Constitution. It would be a Senate whose election one of the constitutional checks upon radical and quick popular action had been abandoned, and be less of the check upon the House which it was intended to be.

These considerations are, however, nothing new. They have been taken up and discussed whenever it has been proposed to amend the Constitution for the purpose of choosing Senators by popular vote. The interesting fact is now that in some states the constitutional provision for the election of Senators by legislatures will become a fifth wheel in the government coach.

Members of Congress representing under cover combinations of enormous capital who corrupt legislation in favor of their adherents will combine against any embarrassment to the corporations, but courageous and determined effort on the part of the people of the separate states will effectually demoralize any opposition.

Iron Wires Being Substituted for Copper.

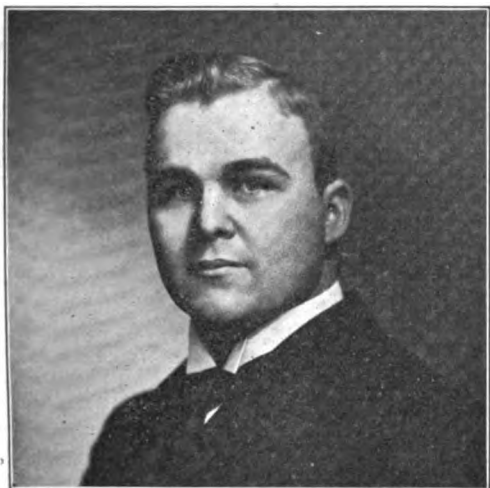
The Postal Telegraph-Cable Company is now improving its wiring through districts where winter storms and sleet are likely to interrupt communication. In mountainous districts and also in valleys in the eastern part of the United States, the sleet and rain frequently collect on the wires and freeze. Then the wires break under the additional weight. The Postal company uses copper wire almost exclusively, but at exposed points in these districts iron wire is being substituted. The tensile strength of the iron wire being so much greater than that of copper, there is less liability of breakage. Where the iron wire is being installed the number of poles is also being doubled.

At exposed places on the Allegheny mountains where the iron wire has been substituted for copper, and the number of poles increased, there has not been a single breakdown during the past two winters. This change in wire is only in the nature of an experiment, but thus far it has proved to be a good one. At the same time the conductivity of the wires has not suffered to any appreciable extent.

TELEGRAPH AGE should go regularly to every one interested in the telegraph. Write for a sample copy.

The New Vice-President of the New York Telegraphers' Aid Society.

The election of Herbert C. Worthen on March 27, as vice-president of the New York Telegraphers' Aid Society, places in that position a very capable member of the younger element in the telegraph profession. Mr. Worthen was born at Shelby, N. C., July 22, 1877. Left an orphan at an early age, he learned telegraphy at the Oxford, N. C., Masonic Orphan Asylum, of which institution he was an inmate, afterwards entering the telegraph service of the Seaboard Air Line Railway, December 5, 1890, at Clay, N. C. Here he remained filling successively promotive places, until May 23, 1898, the last two years of his stay working as relief train despatcher. Subsequently he passed several months at Washington, D.C., with the Western Union Telegraph Company, but since August 8, 1898, he has been in the employ of that company in New York, with the exception of about a year passed with the Laffan



HERBERT C. WORTHEN.
Vice-President of the New York Telegraphers' Aid Society.

Bureau of the New York Sun, and a few months in the train despatcher's office of the Atlantic Coast Line Railroad at Richmond, Va. During the time he has been with the Western Union company he has been in charge of their interests at the Tribune office, and has held, respectively, the positions of traffic chief of the Southern and Eastern divisions and wire chief of the Southern switch, while at present he is the Southwestern wire chief, in each instance serving his company with credit.

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of TELEGRAPH AGE, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

Orders, if sent to Telegraph Age, Book Department for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

SAN FRANCISCO, POSTAL.

Fourth Vice-President C. C. Adams, of this company, of New York, accompanied by his wife, spent several days in this city recently. Mr. Adams is on a tour of inspection of the larger Postal offices on this Coast. He was accompanied to Portland and Seattle by General Superintendent L. W. Storrer.

Mr. Edward Reynolds, auditor of this company, of New York, was also a recent visitor. Mr. Reynolds was accompanied by Mrs. Reynolds.

Mr. Gus Ericson, construction foreman, died here on March 16, after but a few days' illness.

On March 1 our Seattle local was made a bonus wire. E. F. Welker and Miss Beede take care of this circuit.

William McCandlish has been placed in charge of the Postal interests at the "Examiner" office, vice Frank Howard, transferred to the main office.

John Ufford has been changed to the night trick to look after the traffic.

George Crouch is with the Hearst newspapers, here.

J. J. Murphy and W. E. Collins have resigned.

George Davie and Miss O'Connor are late appointments.

Walter Huey, of New York, was a recent visitor.

PHILADELPHIA, POSTAL.

After a long term of hustling work on "A" New York wire, during which time he made and broke the record for the greatest number of messages handled, Mr. Al. Weiss has resigned to accept a position with the Western Union. Mr. A. Goldberg is creditably filling the vacancy thus created by Mr. Weiss's retirement.

Assistant Traffic Chief Harry Thompson meets some pretty hard propositions at times. In connection with regular routine work he found his troubles augmented the other day in his efforts to meet the usual requirements, while being handicapped by the absence of ten men.

The following named are new arrivals: G. I. Haur, from Pittsburg, and M. Ruberg; Mrs. C. C. Figg from the Western Union, this city.

Mr. Robert Robinson, of Lancaster, Pa., always makes it a point to visit his telegraphic friends when

in Philadelphia, among whom he is always welcome.

Owing to the absence of a regular night man, Manager Roy L. Massey of the Broad street station office, found himself obliged to work very long hours, alternating afterwards with Mr. Leo Miller, until a permanent incumbent should be appointed. Mr. Leon Embly, who fills the newly-created all-night operatorship at this office, is doing well.

PHILADELPHIA, WESTERN UNION.

Mr. Charles Henry Beckwith, assistant transfer agent, was married a few days since to Miss Florence Rosabelle Warwick. Numerous telegraph friends of the groom attended the ceremony.

Late arrivals include: Messrs. Holland, Layton and O'Neill, from the Postal company; Mr. Seeley from Egg Harbor, N. J.; Mr. Willis from Trenton, N. J.; Mr. Lieberman, from Philadelphia; Mr. Almes from the Philadelphia, Reading and Pottsville Telegraph Company, and Mr. F. G. Pratt from Elkton, Md.

The recent death of the wife of H. Hamburg, manager of the branch office at 529 Arch street, elicited many expressions of sympathy on the part of his telegraph friends.

CHICAGO, WESTERN UNION.

Chief Operator L. K. Whitcomb has been absent on sick leave.

The east and west switch boards have been burnished up, and present a much improved appearance.

Frank Plain, who has been assisting Messrs. Gales and Eshman in the quadruplex room nights, has been promoted to the east board, nights.

Mr. Walter Omeliah, an old time operator, formerly of this office, known to the theatrical world as Walter McCullough, played at the Garrick Theatre, St. Louis, recently, with marked success.

John L. Cassidy, of Minneapolis, has a rival in the character sketch field, in the person of D. F. Taylor, a recent arrival at Chicago, who is cartooning ludicrous local situations. Mr. Taylor promises to become an artist of note and probably his telegraph career will be short.

E. M. Lusk, of the repeater department, has returned from a trip south. Miss Annie Costello is now assisting Mr. Bassett, the claim clerk.

Frank Donaldson of the loop switch, is sick at home. He hopes soon to report for duty.

Edward Lavery is now working in team with William Dunn on the Omaha bonus wire.

Mr. and Mrs. L. D. Seavey, of Omaha, are now located here.

Stanley Wooster of the Armour company, is now working in this office.

MONTREAL, GREAT NORTH WESTERN.

Mr. Moore, former day traffic chief, has been appointed to succeed Mr. R. E. McCord, recently resigned as night chief operator. When Mr. McCord retired he was presented with a purse of gold by the staff as a token of the high esteem which they held for him. He has ac-

cepted a position of superintendent with the De Forest Wireless Telegraph Company, as announced in the April 1 issue of TELEGRAPH AGE. Mr. Stainton, an operator, succeeds to the position made vacant by Mr. Moore's promotion.

CINCINNATI, WESTERN UNION.

The following are late arrivals at this office: Miss Kate E. Specker, Mr. John A. Walker, Mr. Robert Dudley, Mr. A. C. Bennett, Mr. H. A. Whitehead, Mr. J. P. Quiggins, Mr. Harry Brown, Mr. Chas. Miller and Mr. Robt. H. Caldwell.

ST. LOUIS, WESTERN UNION.

The bonus wires are now being worked in teams, and are arranged as follows: Dallas, R. C. Johnston and C. E. Malett; Chicago, B. F. Ragsdale and W. F. Thomas, G. B. Godfrey and A. J. Mackler; Kansas City, Charles Rapp and F. W. McConoha.

Mr. Ray Alger, one of the wire chiefs, will be married to Miss Virginia Kaut on April 17.

Miss Adele Kaut has left here to take a position in the office of George D. Barnards, vice Miss Virginia Kaut, resigned.

Among the new arrivals are: A. H. Faulkner, W. B. Hill, H. J. Forman, P. P. McGrory, F. W. Farrier, Jr., R. T. Ward, E. E. Hooper, P. A. Miller and J. F. DeWitt.

The telegraph clerks' baseball club will play with the broker operators April 22, at Forest Park.

NEW YORK, WESTERN UNION.

A Last Appeal to the Generous.

This is an invitation to you to be present at the big smoker Friday evening next, April 20, at Manhattan Lyceum. The cause is a worthy one. You or some of your friends may be a beneficiary of this fund at some future time, although I hope not. Valuable prizes to those holding lucky numbers. Please apply to me for tickets, which are 50 cents.

D. A. MAHONEY.

Mr. Robert Logan, formerly of the Eastern division, now with the Anglo-American Telegraph Company, was the winner of a \$25 prize given last week by one of the evening papers, having anticipated to a nicety the correct ending of one of their stories.

Messrs. W. A. Eberts and George L. Marshall have returned from an extended vacation which took them to Denver and Salt Lake.

Mr. J. E. Robinson from the Elizabethport, N.J., testing office, has been assigned to the Southwestern switch.

The baseball season having opened in this city, Mr. R. J. Murphy as usual is in charge of the office at the polo grounds.

Among recent visitors were: Manager C. K. Hunt, of Winsted, Conn., accompanied by his son-in-law, William Strong; also J. G. Purple, former-

ly of this department, and at present engaged in the real estate business.

Mr. M. T. Durkin, assistant wire chief, Western switch, has resigned to accept a position under the government.

Mr. L. D. Grace has been transferred from the quadruplex department to the Western switch, Mr. W. T. Cowardin going to the quadruplex department.

Miss S. P. Coxon of the Western ways has resumed duty after a three-months' absence, following the death of her mother.

Mr. Walter C. Burton, formerly of this department, but now engaged in other business, returned recently from a trip to the Pacific Coast.

NEW YORK, POSTAL.

John J. Whalen, the promotion of whom to be assistant day manager of the Postal, was mentioned in this column April 1, is a native of Long Branch, N. J., where he was born June 11, 1872. At ten years of age he began during his school vacation to serve as a messenger for the Western Union Telegraph Company in his native place. Later he entered the employ of the Baltimore and Ohio Telegraph Company, and rose grade by grade until he became assistant day manager. He first entered the service of the Postal company in May, 1892. In November, 1896, he became a member

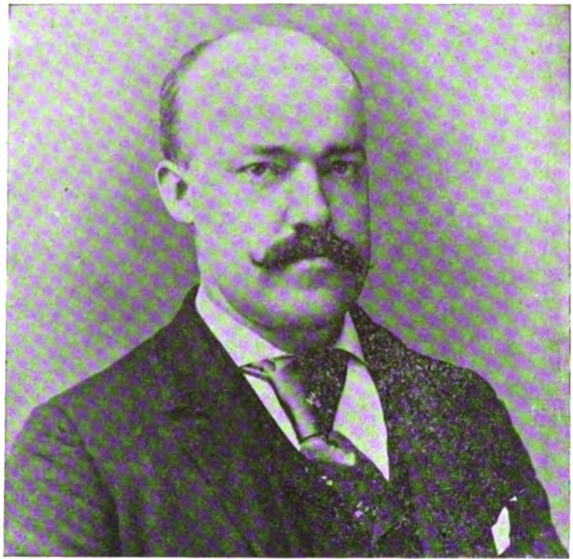


J. J. WHALEN, BECOMES ASSISTANT DAY MANAGER.

of the New York police force, appointed thereto by Theodore Roosevelt, then police commissioner. His term as a policeman was of short duration, for in the following February, 1897, he returned to the Postal employ as wire chief. He was appointed night manager January 1, 1900, and in October of that year rendered conspicuous service in protecting the company's property at the time of the fire originating in the Hardware Club, located on the fourteenth floor of the Postal building. For this action he received the thanks of the company and was rewarded by an increase of salary.

Daniel F. Mallen, until recently assistant night manager, and whose advancement to the position of night manager in place of J. J. Whalen, pro-

moted, was announced briefly in this column April 1, will have completed twenty-two years of service with the Postal company this year. Mr. Mallen began his telegraphic career as a messenger for the Atlantic and Pacific Telegraph Company in Jersey City in 1876, afterwards serving the Western Un-



D. F. MALLEN, BECOMES NIGHT MANAGER.

ion Company first in that city and later in the main office, New York. His experience acquired in the various departments of the Postal service, during which he long held the position of general traffic chief, has been varied, affording him an excellent grasp of the requirements of the general run of the company's business, well qualifying him to discharge the duties of his present post.

Watch the Mecograph demonstrators at the "Big Smoker" Friday evening next. Get your tickets from Mahoney. You may draw one of the many prizes.

The twelfth floor gossip at present is all about the coming "smoker" at Manhattan Lyceum, corner of Sixty-sixth street and Fourth avenue, on April 20, to be given by the Commercial Telegraphers' Union. The Actors' Union and other local unions are contributing to the success of this affair. There is a select vaudeville programme, and an exhibition tournament of fast telegraphing on the bill.

Mr. Wilbur O. Eastlake is back on the Washington bonus after quite a serious illness.

S. A. Coleman, traffic chief, has been transferred to the switchboard.

J. E. McCarter has resigned.

The arrivals are: D. C. Murphy, H. A. Mosher, E. A. McManus, W. W. Wilson, H. N. Wiley, R. Waterbury, E. H. McFadden, V. C. Frost and G. O. Heath.

OTHER NEW YORK ITEMS.

Thirty-eight messengers in a down town telegraph office, New York, went out on strike a few

days ago because they had been forbidden to smoke cigarettes while on duty. To prevent a tie-up of business the manager gave in and withdrew the order.

Mr. M. J. O'Leary, secretary of the Telegraphers' Mutual Benefit Association, recently undertook a trip to Mount Clemens, Mich., for the purpose of accompanying Mrs. O'Leary, who is to remain at that resort for a month, taking the baths for the benefit of her health.

The Magnetic Club, of New York, will hold its spring meeting and dinner at the Hotel Astor, Broadway and Forty-fourth street, on Tuesday evening, April 17, the hour appointed being half past six o'clock. A number of prominent ex-telegraphers are expected to be present.

The friends of Mr. John Brant, secretary of the Old Time Telegraphers' and Historical Association, will be glad to hear that he has so far recovered his health as to be able to resume his duties at his office, where he may now be seen almost daily.

Book Notices.

"The Telegraphist's and Telephonist's Note Book" is the final outcome of a purpose in bookmaking long entertained by its English author for the handy requirements of employees in the telegraph, telephone and railway services. Its contents cover a wide range of subjects of interest to the classes named, inasmuch as it presents solutions of problems met with in every-day practice. Price seventy-five cents. For sale by J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

"Wireless Telegraphy" is the title of a bright little volume of 174 pages that has just made its appearance in England, written by William J. White, of the engineer-in-chief's department of the general post office, London. The author has gone into his subject with evident care, and the discussion of wireless telegraphy and of the several systems now in vogue are invested with much interest. The volume contains fourteen chapters and eighty-six illustrations. Price seventy-five cents. For sale by J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

The twelfth edition of that standard work of Abernethy, on commercial and railway telegraphy, theory and practice, including railway station and express service, arranged on the plan of questions and answers, more than maintains its previous reputation. Revised and enlarged, it affords an excellent study of the telegraph both in its commercial and railway aspects, a guide and help to workers in this broad field of the telegraph of the utmost importance, for the general subject is handled with a minuteness and intelligence rarely reached. The enlarged volume contains 424 pages, and is fully illustrated. Price \$2.00, which includes express delivery charges. Address orders to J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

Canadian Pacific Telegraphs Increases its Facilities.

The telegraph department of the Canadian Pacific Railroad will, during this year, largely increase its wire facilities.

The principal new work to be undertaken, as announced by James Kent, manager of the Canadian Pacific Telegraphs, is as follows:

A copper wire will be erected from Montreal to Winnipeg, which will be worked duplex: this will make four duplex circuits in use between these points; a copper wire from Montreal to Toronto, worked quadruplex: this will make four quadruplex wires between these cities, in addition to the railroad and way wires. An iron wire from Montreal to Ottawa, worked quadruplex, in addition to one now in use. A cable will be laid between Prescott and Ogdensburg for railway service. A heavy iron wire will be erected between Brandon, Man., and Strassburg, Sask. A copper wire between Minnedosa, Man., and Sheho, Sask. Two iron wires from Reston, Man., to Brandon, Man. A heavy iron wire from Brandon, Man., to Regina, Sask., via Arcola.

A copper wire will be erected from Revelstoke to Ashcroft, and an iron wire thence to Vancouver, completing the third duplex wire between Winnipeg and Vancouver; the construction of a pole line carrying two wires between Guelph and Goderich, Ont.; the construction of a pole line carrying two wires, on the new Toronto-Sudbury route; the construction of a pole line and one wire over the new railway branch between Reston, Man., and Wolseley; pole line carrying one iron and one copper wire along the extension of the railway from Sheho, Sask., west; east of Saskatoon a new pole line carrying three iron wires; west of Saskatoon a pole line carrying two iron wires, and from Daysland (near Edmonton), east, two iron wires; pole line carrying two iron wires from Strassburg west; pole line with one wire over the extension from Winnipeg Beach to Gimli; pole line with one wire over the extension north from Teulon, Man.; pole line with one wire on the extension of the Lauder branch.

In all there will be a total of 610 miles of new pole line, and 4,068 miles of wire, 1,966 miles of which will be copper.

In addition to this new work there will be a large amount of reconstruction and general overhauling of the older lines. The company expects to finish this work, now just begun, by early autumn.

Interesting Telephone Figures.

President Frederick P. Fish in his annual report of the American Telephone and Telegraph company just issued, shows that there were 2,528,715 Bell Telephone stations in operation at the close of 1905, an increase of over half a million.

or about 25 per cent. since the close of the previous year. The total mileage of wire in use for exchange and toll service was 6,043,518 miles, of which over a million and a quarter miles were added during the year. During the year the Bell companies spent for new construction in exchanges and toll lines \$46,603,516, and for land and buildings \$4,177,390, a total of over fifty million dollars, as against \$31,619,100 in 1904. During the year the Bell companies handled a total daily average of 13,911,000 connections, or at the rate of about 4,479,500,000 a year, being 54 telephone calls to each man, woman and child in the United States.

The American Bell system of the United States now exceeds in number of subscribers, mileage of wire and the extent of traffic the telephone systems of Great Britain and continental Europe combined.

Mr. Fish says that it is the duty of the company to employ the best business methods, to adhere to their conservative capitalization, to continue to establish and maintain the highest practicable methods of efficiency and to give every portion of the public as far as possible the class of service it requires at the lowest rates consistent with a proper return on the investment.

The Telegrapher's Despair.

Julian Hawthorne as an author is the delight of the printer, but as a newspaper correspondent he is the telegrapher's despair, says the Saturday Evening Post. This is all for the same reason. Mr. Hawthorne writes slowly, carefully weighing each word before he sets it down, and, when he does set it down, forming it in characters so small and upon lines so close together that the process of reading it becomes almost as dilatory as that of writing it. As, of course, the manuscript is typewritten when it is intended for a book or magazine, this method of composition is all very well for the printer, since the author's original deliberation guarantees but few corrections in the typewritten "copy" and still fewer corrections in the proofs. But the meat of the printer becomes the poison of the telegrapher when Mr. Hawthorne happens to be writing news reports for a daily paper and having them sent over a wire. Then it is the original "copy" which goes to the operator, and the more pressing the necessity for speed, the harder becomes the task of meeting the demand.

On one occasion half a dozen newspaper men, among whom was Hawthorne, were all at a small New Jersey town on the same assignment. By seven in the evening all their "copy" had been filed with the single operator, and the whole of it should have been sent and the wire "clear" by ten o'clock at the latest. But at 10.30 one of the reporters happened in at the telegraph office and found the operator still at his instrument.

"What, not through yet?" asked the reporter. "Naw," growled the telegrapher; "I've been workin' on nuthin' but this here Hawthorne mes-

sage since seven o'clock, an' if there's a hundred more words of it I reckon I won't git through before twelve, nuther."

Whereupon the other reporters held a council of war and sent their "stories" by long-distance telephone.

London, Ont.

(Communicated.)

About half way between Buffalo and Detroit, London is situated on the Thames River and surrounded by the rich farming country known as "The Garden of Canada." London is decidedly a manufacturing city as well as an agricultural center. The electric power to be brought from Niagara Falls will serve to increase the importance of London as an industrial city. There are now over two hundred factories in operation at this point, many of them having branches in the leading Canadian cities. London is no less an educational center, there being located there, among other institutions of learning, the Western University and the Provincial Normal School. With its exclusive connection with the Western Union Telegraph Company, the Great North-Western Telegraph Company offers the public telegraph facilities equal to any city in the United States or Canada. Reaching three cable stations and all the important cities of Canada, communication can be had with upwards of 49,000 places in Canada, the United States and Mexico.

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Telegraph Notes From Unknown Europe.

Primitive as we are accustomed to supposing the east coast of the Adriatic to be, the network of telegraph is fairly complete, and in Istria, at every railway station, as in America, the operator is installed, writes Felix J. Koch, in "Sound Waves." There, and in Montenegro, like the post office, the telegraph is a government institution. Even little Montenegro has its wireless telegraph system, owned by the Prince himself, at Antivarri, when the grand cordon of Montenegro was conferred upon Signor Marconi.

At Budapest, in Hungary, the newspapers, one and all, publish the same telegrams from outside, and such a thing as a "scoop," or "beat," is unknown. Hence, much of the necessity for haste in journalistic telegraphing, that is so apparent with us, is there obviated.

Even the higher Carpathians, in the vicinity of Schmecks, have now been connected by telegraph with the greater centers. In Roumania the telegraph and the post office are conceded by the poverty-stricken people to be about the only exemplary institutions of the government.

From Belgrade, Servia, the frequent regicides make cable tolls to the press agencies an important factor in the telegraph offices, though strict censorship obtains.

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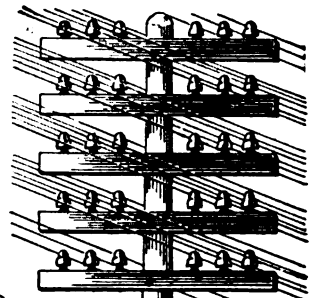
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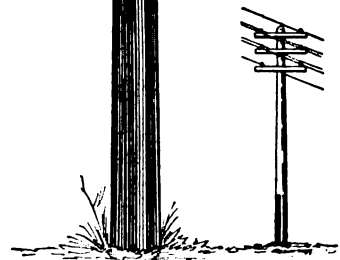
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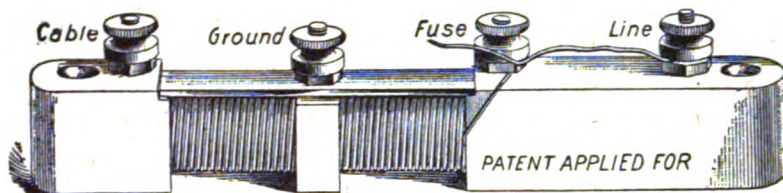
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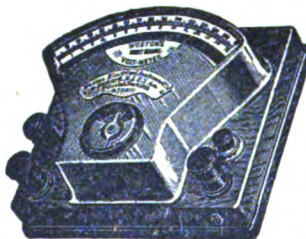
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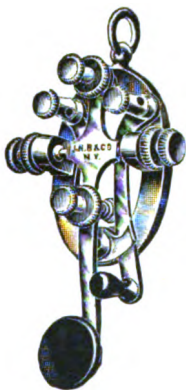
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SOME POINTS ON ELECTRICITY.

The Storage Battery.

Part IV.

BY WILLIS H. JONES.

It has already been shown that the expense incurred in charging storage batteries varies in degree according to the method of arranging the charging circuit and the available facilities offered.

In some cases the charging current must be purchased outright for that purpose only, in which case economy depends upon arranging the circuit in such a manner that the current drawn will have to do as little other work as possible, aside from charging the cell.

Where the charging energy is derived from currents normally performing other work, such as in electric lamp circuits and other household requirements, economy consists in arranging the charging circuits in such a manner that the double utilization of the current will not appreciably interfere with its original or legitimate duties.

There are many opportunities offered in the telegraph service wherein advantage may be taken of the chance to practically get something for nothing. In fact this method is the rule instead of the exception for charging storage batteries in branch offices to furnish currents for the local sounder circuits.

Probably the most economical and satisfactory method of charging a storage battery for this purpose is that of utilizing the various currents that flow through the separate "legs" or grounded loops, in branch offices. Such currents are supplied from the main office, and after traversing the wire and sounder coils empty uselessly into the ground. The volume of current flowing through each such leg is about one-quarter of an ampere, and as a common ground wire usually serves for the terminal in such offices this ground conductor obviously carries to the earth a total volume of current equal to the sum of all the separate currents flowing in the individual legs connected therewith. The plan, therefore, is simply to collect this great volume of current after it has performed its legitimate work just before it reaches the earth connection, and compel it to first flow through the liquid in a storage battery cell, and thus charge the latter before finally disappearing in the earth. The rate at which the cell will accumulate a charge, of course, depends upon the number of such loops or legs emptying their respective currents into the common ground plate. What makes this method of charging batteries particularly easily accomplished is that, owing to the fact that short "duplex" loops or legs are all built up with added resistance to equal that of the longest loops for the purpose of uniformity, there is necessarily a great deal of energy wasted in the built-up legs overcoming "dead" resistance. This offers an opportunity of still maintaining the normal volume of current in the loop conductors, despite the reduction which would otherwise be caused by the two-volt back pressure of an inserted storage cell. The scheme is simply to remove enough "dead" resistance from the conductor as will compensate for the interposed counter electromotive force. For illustration, to create a current of one-quarter of an ampere of current in a conductor with a 25-volt pressure at the main office, there must be a total resistance therein of 100 ohms.

$$\text{Thus, } \frac{25 \text{ volts}}{100 \text{ Res.}} = .25 \text{ current.}$$

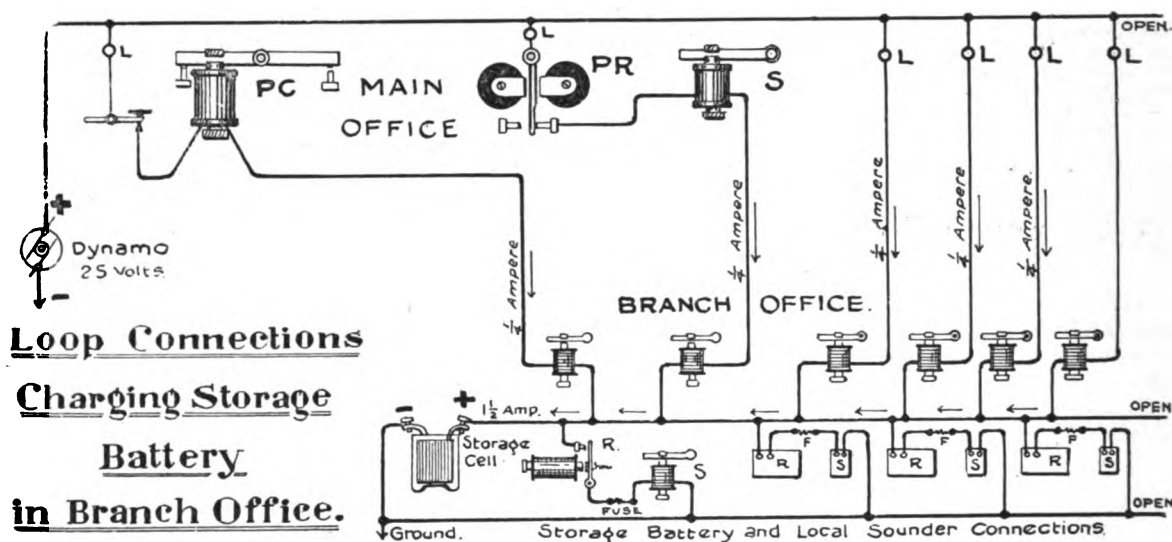
Now, if we insert a storage cell of battery in this conductor it will oppose the 25 volts at the main office and therefore reduce the effective pressure to 23 volts. This would result in a decrement of current in that leg if the resistance was allowed to remain unaltered. To avoid this loss, part of the dead resistance must be re-

removed. This is accomplished by means of the substitution of a smaller lamp or German-silver wound coil, as the case may be, for the one then in use.

$$\text{Thus, } \frac{23 \text{ volts}}{92 \text{ Res.}} = .25 \text{ current.}$$

We thus still get the original volume of current required in the loop conductors for the operation of the sounders, and it does not cost us an additional cent to charge the storage battery. As a matter of fact, it is cheaper by nearly ten per cent. to furnish the branch office with its normal current while charging the cell than it is to supply the same volume with the cell removed and the original lamp restored. In the original arrangement the energy expended is $25 E \times .25 C = 6.25$ watts, while in the charging arrangement it is $23 E \times .25 C = 5.75$ watts.

current, or three amperes in all, into the cell when all are closed at the same moment. This would mean one and one-half amperes per hour, but in reality the volume is only a little over half that amount because while the duplexes and quadruplexes are working the local circuits are, of course, open about half the time. The current in the legs will not flow through the branch office sounders shown in the lower part of the diagram because it cuts through the "no resistance" cell to the common ground wire instead of through the four-ohm resistance in the sounders. The branch office sounders used in connection with the relays on single line circuits are arranged in multiple in the usual way. As the electromotive force of the storage cell is two volts and the resistance of the sounder is four ohms, it is necessary to insert an additional resistance of four ohms in series with each such sounder in order to reduce the current to its proper value



This point is brought out for the second time in this series of articles for the purpose of impressing the laymen with the importance of first taking advantage of existing facilities for obtaining charging current rather than pay for it unnecessarily.

The accompanying diagram, taken from "Pocket Edition of Diagrams," shows an arrangement which has been in practical operation in New York city and elsewhere for a number of years and which has not only been highly satisfactory as to service, but eliminates the expense and care required in the maintenance of gravity batteries for local circuits. The diagram shows the storage cell receiving current from three loops, or rather six grounded duplex legs, three sending and three receiving side conductors. The first loop in order is shown in connection with the polechanger and the receiving sounder at the main office. The others, showing lamps only, at the main office, are, of course, similarly connected at that point. Each of these loop conductors empties one-quarter of an ampere of

of one-quarter of an ampere. This is usually accomplished by means of a four-ohm fuse, which serves in the double capacity of resistance and a safeguard.

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, inc.; June 1 to July 16, inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power from the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16; The Dynamo—Series, Shunt and Compound Wound, Feb. 1-16, March 1; The Storage Battery, March 16-April 1-16.]

Business Notice.

The transmitting device of the Mecograph Company, of Cleveland, Ohio, whose advertisement will be found elsewhere in this issue, appears to be meeting with decided favor among the operating fraternity the country over. Its excellent qualities as a transmitter are attested to in the following testimonial dated April 6, of this year, from operators J. H. Gallagher, W. J. Mitchell, C. W. Monett, Daniel Lipshitz and Joseph Scheidlaur, employed by Logan and Bryan, 14 Wall street, New York: "The No. 3 model Mecograph machines in use in this office have shown wonderful working qualities on the many long circuits connecting our various branches. We consider your instruments superior to any in existence."

Personal Mention.

Mr. Patrick B. Delany, of South Orange, N. J., the well-known old time telegrapher and inventor, has gone to his summer home at Nantucket, Mass.

Miss Adola Greely, daughter of Major General Greely, was married at St. John's Episcopal Church, Washington, D. C., on April 24, to Rev. Charles L. Adams, of Northampton, Mass.

Mr. T. A. Edison has returned with his family to Orange, N. J., after his usual winter vacation on his Florida plantation. He is in much improved health and has resumed active work at the laboratory.

In honor of the bi-centennial of its great founder, Benjamin Franklin, the University of Pennsylvania on April 19, conferred honorary degrees upon famous men from all parts of the world, including William Marconi, inventor of wireless telegraphy, and Andrew Carnegie, the old time telegrapher and philanthropist.

Western Union Telegraph Company.**EXECUTIVE OFFICES.**

Colonel R. C. Clowry, president and general manager, accompanied by H. D. Estabrook, solicitor of the company, and Mrs. Estabrook, sailed for Europe on the steamer Celtic, on April 20. The cable steamer Western Union with all of the officials of the company and a few personal friends on board, went down the bay, accompanying the great liner as far as the Narrows. The party on board of the Western Union consisted of J. C. Barclay, T. F. Clark, J. B. Van Every, G. H. Fearons, G. W. E. Atkins, M. T. Wilbur, A. R. Brewer, J. C. Willever, C. H. Bristol, G. F. Swortfiger, F. J. Scherrer, E. M. Mulford, M. W. Hamblin, P. J. Casey, James Kempster, William Holmes, S. H. Strudwick, C. F. Patterson, I. B. Ferguson, Herbert Smith, Belvidere Brooks, A. G. Saylor, Rush Taggart, H. E. Roberts, W. J. Dealy and Frank Jaynes, of San Francisco.

Mr. Frank Jaynes, general superintendent of the Pacific division, with headquarters at San Francisco, Cal., accompanied by his wife, returned to California April 21, after a visit of three weeks in New York and vicinity. Their residence in San Francisco having been destroyed Mrs. Jaynes will for the present make her home with friends in one of the suburban towns.

Mr. S. E. Leonard, manager of the El Paso, Tex., office has been promoted to be assistant superintendent at Denver, Col., vice A. A. Gargan, made permanent manager at that point. Mr. J. W. Dudley has been appointed manager at El Paso, to succeed Mr. Leonard.

Among the recent executive office visitors were John McRobie, superintendent of the American District Telegraph Company, Chicago, Ill.

Mr. John L. Henson, the colored porter who was attached to Col. Clowry's private car for twenty-three years, and who was well known to railroad and telegraph officials throughout the country, died of pneumonia on April 10.

Postal Telegraph-Cable Company.**EXECUTIVE OFFICES.**

Mr. William H. Baker, vice-president and general manager, who was accompanied by Mr. Thomas E. Fleming, special agent of the company, is back again from a three week's business trip to the larger Southern cities, returning by the way of Louisville and Cincinnati.

Colonel A. B. Chandler, chairman of the Board of Directors, has gone to his farm at Randolph, Vermont.

Mr. E. C. Bradley, vice-president, is in San Francisco supervising the re-establishment of permanent facilities.

Mr. Edward Reynolds, auditor of the company, who was accompanied by his wife, has returned from a seven weeks' trip to the Pacific Coast, whither he went in the interest of the service.

Mr. John F. Skirrow, associate electrical engineer, is reported to be very much improved in health, and expects to be able to return to his office in the near future.

Mr. J. T. Needham, district electrician, has returned to his office after a brief sojourn in Canada.

Mr. F. D. Nash, formerly superintendent at Jacksonville, Fla., who resigned sometime ago on account of ill health, is now manager at Helena, Mont.

Mr. George F. Fagan, chief clerk in the general manager's office, is absent because of heart trouble.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. F. P. Duckett, manager at Saginaw, Mich., has resigned to engage in other business.

Charles A. Faulkner has been appointed man-

ager at Middletown, N. Y., vice J. M. Faulkner, deceased.

Mr. W. S. Calhoun, chief operator of the Atlanta, Ga., office, has resigned to enter the service of the Long Distance Telephone Company. The vacancy has not yet been filled.

Mr. A. W. Woodle, formerly manager of the Portland, Me., office, but for some months past superintendent of the American District Telegraph Company at Boston, Mass., has been appointed acting manager of the Boston office, vice W. A. Rudd, deceased.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. Alfred J. Cook has been appointed manager at Johnstown, Pa., vice Mr. E. Y. Ouderkirk, resigned to engage in other business, as previously announced.

Recent New York Visitors.

Mr. S. F. Shirley, of the "Globe" staff, Boston, Mass.

Mr. James G. Davies, manager of the Great North Western Telegraph Company, Ottawa, Ont.

Mr. Alex. Craw, claim agent of the New York Central Railroad system at Jersey Shore, Pa., and formerly an old time telegrapher.

Mr. W. L. Truesdell, formerly manager of the Postal Telegraph-Cable Company at St. Louis, Mo., but now engaged in outside business at Columbus, O.

Mr. J. W. Dunn, at one time a prominent Rochester, N. Y., operator, at present in the brokerage business at Wilkes-Barre, Pa. Mr. Dunn was accompanied by his wife.

The Railroad.

Mr. W. F. Williams, superintendent of telegraph, of the Seaboard Air Line Railroad, Portsmouth, Va., was in New York, April 17.

Mr. U. J. Fry, superintendent of telegraph of the Chicago, Milwaukee, and St. Paul Railroad, Milwaukee, Wis., was a New York visitor on April 24 and 25.

The Association of Railway Telegraph Superintendents will meet this year at Denver, Col., on June 20, and will make the Adams Hotel in that city its headquarters.

A bill has been introduced in the Maryland Legislature to provide for the examination and license of all telegraph operators engaged in handling block signals and telegraphic train orders affecting the movement of trains on all railroads engaged in Interstate commerce.

Don't borrow your neighbor's paper; subscribe yourself for TELEGRAPH AGE. You can't afford to be without it.

The Cable.

Mr. W. J. Fraser, superintendent of the Direct Cable Company, Boston, Mass., and Samuel Fenn, superintendent of the same interests at Halifax, N. S., were among the recent New York visitors in cable circles.

Mr. S. S. Dickenson, general superintendent of the Commercial Cable Company, New York, went to San Francisco in the interests of the Commercial Pacific Cable Company to help out during the trouble growing out of the earthquake at that point.

Cable communication with the following places is interrupted April 25:

Teneriffe, "via Cadiz"	July 20, 1905.
Messages for Canary Islands must go "via France—Dakar"	

Tangier, "via Cadiz"	Feb. 18, 1906.
Colon, "via Jamaica"	Jan. 9, 1905.
Venezuela	Jan. 12, 1906.

Messages may be mailed from Curaçao or Trinidad.

French Guiana (Paramaribo-Cayenne cable)	Apr. 20, 1906.
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Mail from Paramaribo.	
Pinheiro, "via Cayenne"	Aug. 13, 1902.

The Commercial Pacific Cable Company's main office at San Francisco, which was destroyed by earthquake and fire on April 18, was situated in the Hobart Building on Market street, in which the Postal Telegraph-Cable Company's office was also located. Early realizing the enormity of the disaster, Patrick McKenna, acting superintendent, with rare discretion and great energy, removed the artificial cable, the Siphon recorder and other expensive submarine cable apparatus, altogether over three tons in weight, and which could be duplicated only with the greatest difficulty and with considerable delay. The entire office machinery except the battery was eventually removed to the cable hut near the Cliff House on the shore of the Pacific ocean, and cable work resumed. After the fire had subsided it was found that the underground cable lines had suffered no damage from the earthquake shocks.

The Shanghai and Manila offices of the Commercial Pacific Cable Company are in communication by the new cable. Messages between the President of the United States and the Emperor and Empress Dowager of China have been exchanged.

The completion of this cable finishes the work commenced by the laying of the Commercial Pacific Cable from San Francisco to Honolulu and continued by the laying of cables between Manila and Honolulu by way of Guam and Midway. Nearly 10,000 miles of submarine cable have been made and laid in an average depth of 2,640 fathoms. The greatest depth found on the line of the cable was 3,490 fathoms, approxi-

mately four miles. The laying of the cable to China was delayed by the political upheaval in that country, and later by the war between Japan and Russia. After the treaty of Portsmouth the work was taken up again, and the United States is now in communication with its Pacific ocean possessions and with China by means of the cables of an American company operated by American operators and touching only American soil as desired by the Government at Washington. The China end of the cable from Manila is laid far up into the estuary of the Yangtse Kiang river. The cable ship which laid the main part of the cable was unable to maneuver in the estuary, therefore the cable already laid was cut and buoyed and the cable ship proceeded to Woosung, where an intermediate type of cable, designed for shoaling waters, was transferred to a smaller ship. Also the heavy shore end was transferred to a lighter. The difficulties encountered in laying the shore end were somewhat unusual, owing to the shallowness of the water, the necessity for accurate location and the unfavorable character of the weather which prevailed during the operations.

The shore end is led into a hut at Paoshan. From Paoshan the line is continued by underground wires into the Commercial Pacific Company's office in the City of Shanghai, the principal port of Central China, in the immediate neighborhood of the richest silk and tea districts, and the distributing point for the whole of the Yangtse Valley with its one hundred and fifty millions of population.

Mr. George G. Ward, vice-president and general manager of all the Commercial cables, arrived in Shanghai, China, on April 23, with a view to confer with the Government officials of China and to inspect the new cable stations of his company.

The following messages were exchanged April 16-17 between President Roosevelt and the Dowager Empress and the Emperor of China, in commemoration of the opening of the last link of the Commercial Pacific cable connecting the United States and China:

Washington, D. C., April 16, 1906.

Their Imperial Majesties,

The Empress Dowager and the Emperor of China,
Peking.

I gladly take the opportunity afforded by the auspicious completion of the last link in the new American cable that joins the Pacific Coast of this country to the Far East, to offer to your Majesties my congratulations upon the achievement of a work that must needs contribute to the high purpose of bringing our two governments and peoples closer together in the bonds of mutual understanding and lasting concord. It is fitting that this fresh tie between the western and eastern continents should begin its happy service by bearing a message of good will, and I voice the earnest wish of this government and of my countrymen for the happiness and welfare of your Majesties and for the continued prosperity of the Chinese Empire and of your great people.

Theodore Roosevelt.

Peking, April 17, 1906.

To His Excellency Mr. Theodore Roosevelt,
President of the United States of America,
Washington,

Greeting: We are very much pleased on receiving your Excellency's special telegram of congratulations upon the auspicious completion of the new cable joining the Pacific Coast of your country to the Far East. It is our sincere hope that by the completion of this new cable the commerce of your country and China will become more prosperous. By the order of the Empress Dowager, we now offer to your Excellency our sincere congratulations.

Emperor of China.

It is stated in connection with the concluding negotiations at Algeiras that Germany has assured herself the right to land a cable in Morocco—a right already possessed by England, France and Spain—and it is expected that the privilege will be exercised at no distant date. The natural starting point for the cable would be Vigo, where the German Atlantic Telegraph Company already has a cable station, and the landing point would be a Moroccan port on the Atlantic Ocean. At present communication between Germany and her African possessions both in the east and the west is only possible by means of British cables, but a German cable to Morocco would form the beginning of a telegraph line which in future would place Germany in a position to cable to her colonies in Africa without foreign assistance. In this connection the Berlin Tageblatt states it is apparent that in course of time the cable to Morocco will be extended to the Cameroons, whence it will cross Africa through the Congo region, and thus bring German East Africa within its scope. Certain land lines already exist in the Cameroons, while in the last the telegraph service reaches as far as Lake Tanganyika, and the day will come when these two services will be united. The French have for some time past projected a telegraph line which would lead from Algeria across the Sahara, and link up the French possessions on the Congo. It is assumed that the German line, which is to form a connection at Lake Tanganyika with the English land lines between the Cape and Cairo, would also be joined in the Congo region with this French service, which will perhaps not have to be waited for very long. In this way German East Africa and the Cameroons would not only be directly connected together, but also with Germany. A further question for the distant future will be the establishment of direct communication between the Cameroons and German Southwest Africa.

General Mention.

The bill authorizing the State of Massachusetts to exercise supervision of telephone and telegraph companies has passed the Legislature.

The telegraph operators in France who went on strike three weeks ago because the government refused to employ sufficient help to move

the traffic expeditiously, are still out. Soldiers are protecting the new employees, and it is said that the telegraph service is handled subject to delay.

A bill has been introduced in the New York Legislature providing that insulators carrying high-tension currents must be made of a red color.

Mr. Thad M. Schnell, a well known old time military telegrapher of Des Moines, Iowa, has removed to Omaha, Neb., where he is still engaged in the telegraph service.

It is stated that 6,700 members were added to the Order of Railroad Telegraphers during 1905, and that new and revised schedules were obtained on thirty-four railroad systems.

Mr. George R. Young, chief clerk and cashier of the Postal Telegraph-Cable Company at St. Louis, Mo., who was short in his accounts, committed suicide when arrested on April 14.

Mr. Richard D. Walsh, of Little Bay, Newfoundland, in a recent letter writes. "I am very much pleased with TELEGRAPH AGE, and sorry I have not been a subscriber these many years back."

Mr. J. Schanher, manager of the Western Union Telegraph Company, Mount Clemens, Mich., writes: "I am glad to renew my subscription; I find TELEGRAPH AGE of great value and would not be without it."

A highly entertaining lecture was given to the New York Electrical Society at the Edison auditorium, New York, April 25, by Melville E. Stone, general manager of The Associated Press, on "Newspapers and the Telegraphic Art."

The official report of the Transvaal, Africa, Postal and Telegraph Department for the year ended June 30, 1905, shows that the revenue from telegraphs and telephones was £154,211, as compared with £138,161 in the previous year.

Mr. T. H. Harper, an old time Western Union operator at Toledo, O., now of the American Telephone and Telegraph Company of Maumee, O., writes in a letter renewing his subscription: "I eagerly look for each issue of your valuable paper."

The Zeitschrift für Post und Telegraphie states that telegraphs were first introduced into Egypt about fifty years ago, and in 1903 there were 4,083 kilometres of line, and 17,486 of wire. Telegrams numbered 1,617,946 in 1902, as against 2,753,488 in 1898.

United States Consul Hamm reports from Hull that the expansion of the English telegraph service has been checked by the more general use of the telephone. A proposition is, therefore, being considered to reduce the cost of a six-word telegram, including the address, to six cents.

In Portugal in the year 1904 there were 8,974 kilometres of line and 20,186 of wire, as well as

482 telegraph and telephone stations and fifteen semaphoric stations. Telegrams dealt with numbered 5,833,522, of which 1,383,062 were forwarded, 1,639,460 were received, and 2,811,000 were transit telegrams, the total being an increase of 8.1 per cent. on the previous year. Lisbon accounted for the greatest number of telegrams, viz., 1,068,812.

A gang of men started in to erect telegraph poles east of Lockport, N. Y.. A farmer claimed he had never sold or given permission to the company to use his land. The foreman produced a blue print and argued that the poles should go where the men were excavating, and furthermore announced his intention of setting them and stringing the wires. Seeing protestation was useless the farmer went to his barn and released a bull. The animal charged on the diggers. As they went over the fence the triumphant farmer called out: "Show him your blue print!"

At the regular annual meeting of the Telegraphers' Mutual Relief Association, of Washington, D. C., held in that city April 15, official action was taken in respect to the death of the late Secretary Elijah L. Bugbee. Mr. Bugbee had been identified with the association since its organization and the success it had achieved has been due largely to the untiring efforts on his part. Mr. George L. Diven, president of the association, referred to Mr. Bugbee's death in his annual report and paid him a beautiful tribute, both as a telegrapher and as an officer of the association. Upon motion, properly seconded, the president appointed a committee to draft resolutions on the occasion of Mr. Bugbee's death.

Ennis Printing Telegraph.

George H. Ennis, of New York, has invented a printing telegraph on a new principle, for which he has received letters patent. It is very simple in construction, prints one character at each depression of the type bar and does this with only one impulse of current, thus doing away with complication of parts. The ordinary typewriter keyboard is made use of. It is a page printer, synchronizes at the end of each letter and will print 42 characters.

Giraffes Tie up Telegraph.

There has been a temporary interruption in the telegraph service on the Victoria Falls line, Africa, according to the Bulawayo Chronicle.

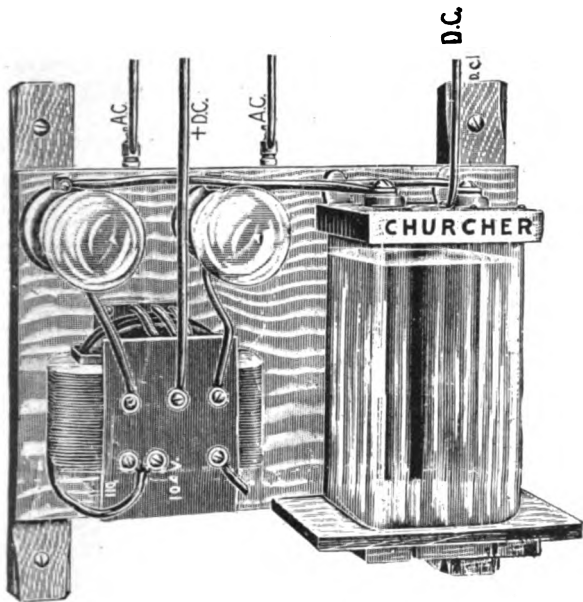
It appears that a herd of giraffes became entangled by their necks in the wires at Intundhla, 125 miles from Bulawayo, and pulled about a mile of wire down, breaking three of the iron poles.

The telegraph lineman was near at hand and communication was interrupted only for a few hours. This is the sixth time since the opening of the Falls line that similar interruptions have occurred. In two cases elephants were responsible.

The Rectifier.

BY J. B. MC CABE.

The Churcher alternating current rectifier introduced by Mr. L. S. Miller, the inspector of the Western Union Telegraph Company, of Cincinnati, has proven so successful in use that it promises to find general application wherever a direct current is needed, and where an alternating current is obtainable. Four cells of this rectifier at Hamilton, Ohio, replace one hundred cells of salamoniac battery, operating eighty-five clocks and also enabled the cutting out of all the winding batteries on top of the clocks from the main setting batteries. At the same place one cell of rectifier operates the McCullough night watch system, replacing fifty-eight cells of battery; and another cell of rectifier operates a ticker service which required thirty-five acid cells, which were renewed twice a week. The rectifier cells give a force of



TSB CHURCHER RECTIFIER.

fifty volts each, which is produced from a one hundred and ten volt alternating primary current. These rectifiers have also been introduced at Springfield, Chillicothe and Wellston, Ohio, with equal success.

The rectifier is the outcome of the known fact that certain metals such as aluminum while immersed in certain solutions produce upon their surfaces an insulating film while electrically positive to another electrode.

The Churcher rectifier uses a transformer in which the secondary coil is tapped in the center. This tap remains positive to either terminal of the cell.

The transformer is connected to the cell in the manner illustrated. The secondary side of the transformer is wound to twice the resistance necessary to produce the desired direct current with a tap exactly in the middle of it, one-half always

being dead, for the reason that a positive current will not travel through the solution from the aluminum to the lead bar, while the negative current passes freely across the solution, always giving a negative current from the lead bar and a positive from the center tap. The ingredients of the solution are composed of one pound of phosphate ammonia, one ounce phosphate potassium, one ounce cream tartar.

Under the Sea to Alaska.

John F. Tinsley, electrical engineer of the Signal Corps, United States Army, in an article appearing in *Sunset Magazine*, entitled "Under the Sea to Alaska," states that the length of the several links of cables, three in number, extending from Seattle, Wash., measure to Sitka, 1,070 miles; to Juneau, 291 miles; to Valdez, 640 miles. The Alaskan cable policy of the government was the result of a plan evolved after considerable investigation of conditions, and its accomplishment was made possible by the appropriation by Congress, on March 3, 1903, of \$485,000 for the manufacture and installation of a submarine cable between Juneau and Sitka, and one between Sitka and Seattle.

On April 23, 1904, Congress made an additional appropriation of \$321,580, for the extension of the system from Sitka to Valdez. The fact became imperative that the growing importance of Alaska under the impetus of American jurisdiction made it absolutely necessary, for several reasons, that reliable means of rapid communication between that territory and the United States be established, and the territorial conditions were such as to preclude the fulfilment of this requisite by any other agent than the submarine cable.

Before the Alaskan cables were laid, a telegraphic message from the United States to Alaska was sent by way of Vancouver, British Columbia, across several hundred miles of Canadian telegraph line to the Alaskan border; thence by government line to its destination, its route depending upon the geographical location of the latter.

This was the only line in existence, and was necessarily a very long route, but aside from this fact, its extension over Canadian territory was an objection from the standpoint of the United States government. A government, on general principles, prefers its own line for the transaction of official business to one extending over the territory of a foreign power. From a military standpoint, the installation of the Alaskan cables was a necessity, for with the Canadian line the only one between Alaska and the United States, it is evident that in case of war with Great Britain, Alaska could be absolutely cut off from the United States in a single moment with possibly very serious consequences.

The construction of the land lines in Alaska was begun in 1901, under the direction of General

A. W. Greely, the chief signal officer of the army, and in the past three years, the Signal Corps has constructed 1,439 miles of telegraph line in Alaska. These lines form a great chain of communication, joining together almost all the principal cities and towns of the vast Yukon Valley and Bering Straits region, and southeastern Alaska. At the beginning of last year, therefore, all that was needed to make the system an all-American one, was a cable to connect Valdez, in southern Alaska, with Sitka, in southeastern Alaska, and one to connect Sitka with Seattle.

When one considers that in the spring of 1901 no communication whatever could be had with Alaska, except by steamer, and notes the work that has been going on for three years, steadily and quietly, to overcome this condition of affairs, the marvelous progress made against almost innumerable obstacles is made clear.

In the building of these Alaskan lines, the Signal Corps of the army, upon whom, by law, devolves the construction and maintenance of government lines of communication, performed a work that must always remain a monument to the bravery, perseverance, and resourcefulness of the officers and men engaged upon it.

Telephone Underground System Growing.

The American Telephone and Telegraph Company, which is placing its wires underground between New York and New Haven, Conn., has practically finished the work, according to a lengthy descriptive article on the subject printed in the New York Electrical Review of April 14. While the distance between New York city and New Haven is some seventy-odd miles, the cable system which will be installed in these subways is essentially a short-haul system. Use will be made of the Pupin loading coil for the long-distance line, but it must be remembered that this conduit system has been built with reference to the local exchanges in the towns through which it passes. The American Telephone and Telegraph Company is expending large sums of money upon its underground construction. As was pointed out in the recent annual report, at the end of 1905 there were 95,000,000 duct feet of underground conduit installed. The New York-New Haven system is the longest continuous system yet completed. Rights of way, however, have been secured clear through to Philadelphia, Pa., and in other parts of the country extensive work of this nature is going on or is about to be undertaken. So great has been the growth of telephone service that the overhead network has, in many localities, become so extensive that compacting into cable form has been necessary. Then, again, the immunity from interruption by reason of storm or other atmospheric casualty is an important factor in determining the very great in-

vestment which is involved in a permanent conduit system.

Improve Your Time.

Going daily: twenty-four hours (precious hours) of your life that can never be brought back. What have you done with them? Have you anything to show for them, or have you frittered them away? It is dreadful that we are so extravagant with time, the one thing that we can never win back. We waste it recklessly, foolishly. From every waking hour we should derive some benefit. Begin to-day and get the most you can out of every day hereafter.

Live, don't stagnate. Have an interest of some kind. Anything is preferable to apathy. Make up your mind to learn something every day.

The older you grow the harder it will be to learn and to receive new impressions. You cannot afford to waste a moment. Put your whole heart and soul into whatever you do, and you will reap better results. Don't drift along thinking you'll do something to-morrow; do it to-day. Remember that you have a duty to yourself as well as to the world at large.

That duty is self-improvement. Seize every opportunity that comes your way. Don't be ashamed to ask questions (this question does not apply to travelers), that is the only way to learn, and don't under-estimate your own powers. Instead of thinking that you can't do a thing well, make up your mind that you will do it well. Don't be too backward—the world will forget all about you unless you push things along. So many people are merely existing. They drag along in a spiritless way, hating their lives, and yet not having sufficient energy to make a change. Shortly they will be so deeply imbedded in their slough of inertia that they will never get out of it. Life is so wonderful and beautiful, do not let us plod down the years of time; let us march proudly with heads up and eyes set steadily on achievement. We must do something, must have something to show for the years of life that have been granted us. We all have a chance to better conditions; if not yourself, help others. If you load the boat too heavy it will sink.

If you look at this in the right light you'll understand what your duty is to better your working conditions.—H. Miller, in the Railroad Telegrapher.

To Find the North Pole.

Walter Wellman, the Chicago journalist, who has an assignment to find the north pole by means of balloon travel, announces that he has made a contract for three wireless telegraph stations, which will keep his balloon expedition in constant communication with Hammerfest, Norway, where there is a cable station. If the plans do not miscarry, the explorer, when he reaches the pole, will be able to report to New York immediately. Now all that remains is to find the north pole.

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NEW YORK, MAY 1, 1906.

The Book Department of *TELEGRAPH AGE*, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientele. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The Telegraph in the San Francisco Calamity.

The awful tide of disaster, by earthquake and fire, which swept over San Francisco on April 18 and on subsequent days, and almost wholly wiped that fair city from off the face of the earth, presented a scene of horror of which no one not present can possibly have any adequate conception. Examples of personal heroism, shown under the most dreadful of conditions calculated to distract humanity, in which the highest type of Christian character, manly courage and devotion to duty were manifest, were exhibited without end, and reflect in the highest possible manner the worth and fortitude of the inhabitants of the stricken city. Many such scenes had their picturesque side in the fearful drama being enacted, vividly appealing to the popular imagination, but none the less because unseen, was the work performed by the telegraphers

less heroic. Remaining at their keys in imminent danger from falling walls and approaching fire, these men performed their duty and gave to the world news that shocked mankind with its terrible story, told with a wealth of detail and fidelity to truth the like of which has never hitherto been equaled. No more valuable service than this could have been performed, for in the open communication maintained it brought relief to thousands of anxious hearts; and all done at the imminent risk of lives that refused to seek safety in flight, giving rather allegiance to their profession sublime in its action. Many of the telegraph people worked from three to five days without rest, separated from their families and away from their homes, which in many instances were destroyed.

The telegraph companies were keenly alive to the exigencies of the situation thus suddenly imposed upon them with all of its attendant disaster and responsibility. The ability which characterized the action of executive authority clearly indicated the energy, resourcefulness and liberal mindedness of those in power. Wires were kept open, maintained under the most difficult of conditions, and certain domestic messages relating to the relief of sufferers in San Francisco were transmitted free of charge.

The main offices of both the telegraph companies were located in the business heart of the city, the Western Union at Montgomery and Pine streets and the Postal in the Hobart building on Market street. These were destroyed as well as all of the branch offices, between forty and fifty in number, all going down in the general ruin which surrounded them.

A disposition is being shown among telegraph men the country over to rally to the relief of their afflicted brethren of the key in San Francisco. Numerous calls have been issued inviting cash subscriptions, for this laudable purpose, and at a number of points considerable money has been raised and forwarded on its errand of mercy. The movement is a most commendable one and it is to be hoped will meet with a popular, sympathetic and generous response on the part of the fraternity.

THE WESTERN UNION TELEGRAPH COMPANY.

When it became apparent that the main office of the Western Union Telegraph Company in San Francisco was doomed to destruction, a temporary office was established in the big Oakland ferry house at the foot of Market street, a structure which although injured by fire had been spared from destruction. From this point a wire was soon in operation, connecting direct with the office of J. C. Barclay, assistant general manager of the company, 195 Broadway, New York. Mr. Barclay at once had another circuit arranged to connect with the Executive Mansion and the War Department at Washington, whereby the government might secure direct communication with San Francisco.

The staff at San Francisco was reinforced by the arrival of J. G. Blake, superintendent at Seattle, and by a large number of operators and expert linemen from various sections of the country.

The phantoplex circuit between Los Angeles, Cal., and Denver, Col., a distance of about 1,500 miles, carried at least 800 messages per day in this emergency. The work of this circuit greatly relieved the congested condition at Los Angeles. This phantom circuit was repeated at Ashfork, Ariz., and at La Junta, Col.

Speaking of the work done by telegraph men in connection with the San Francisco disaster, Mr. W. H. Baker, vice-president and general manager of the Postal Telegraph-Cable Company, says:

Telegraph operators have always shown the highest self-sacrificing spirit, faithfulness and great physical endurance in times of public disasters and calamities, in pestilence and in war. I desire through *Telegraph Age* to testify to the loyalty of our men in San Francisco, who with little sleep, scarcity of food and water and, in some cases, without knowledge of the whereabouts and safety of their families, heroically stood by the company, realizing the great importance of their work and that without their assistance all agencies for relief and restoration of normal conditions would be, at least temporarily, at a standstill. The various forces, civil and military, and all humanitarian efforts were practically dependent upon the work of the earnest, faithful and patient telegraph operator. Our men stood by us loyally without any promises of reward, simply doing their duty and doing it willingly and conscientiously. Not only the force at San Francisco, but all employees throughout the service have stood to their posts regardless of self-interest and at the cost of personal comfort, and have worked hard and efficiently to maintain the lines and move the traffic. We are proud of our men.

The officials of the Postal Telegraph-Cable Company at San Francisco consist of L. W. Storrer, general superintendent; W. Hearn, superintendent; W. C. Swain, assistant electrical engineer; G. W. Holt, manager; F. Arnberger, chief operator; G. Woodward, night chief; G. W. Parsons, all night chief, and M. O'Neill, traffic chief.

The Postal company employs over fifty operators at San Francisco, but at this writing the names are not available.

THE ASSOCIATED PRESS.

The Associated Press at San Francisco performed marvelously good work at the time of the great disaster in that city. The staff remained on duty without regard to personal comfort, holding the public welfare in the matter of news to be paramount to all other demands. This band of devoted men must be reckoned in with other heroic telegraphers at that sorely stricken point. Their names are as follows: Paul Cowles, superintendent; R. S. Johnson, E. E. Curtis, J. M. Carroll, John Finlay and H. H. McDonald, editors; R. L. Creighton and R. J. Waters, stenographers; Robert E. Geistlich, chief operator; B. F. McInerney, W. F. Lynch, J. K. Brown and Harry Collins, operators.

The Magnetic Club Dinner.

The spring dinner of the Magnetic Club was celebrated with its accustomed éclat at the Hotel Astor, New York, on the evening of Tuesday, April 17. Interest in these delightful affairs suffers no abatement, if a large attendance may be the criterion, for one hundred and sixty persons sat down to the well appointed tables. It was a pleasant company, and good fellowship was manifest on all sides. The diners gathered there represented the telegraph, the telephone and the general electric industries, including manufacturers and dealers in telegraphic and electrical supplies. During the progress of the dinner an interesting programme made up of vaudeville performance and song, was rendered. At the conclusion of the repast, Colonel Albert B. Chandler, the president of the club, made a short and felicitous address of welcome, congratulatory to those present, which was well received. He also read letters of regret from Colonel Robert C. Clowry, Clarence H. Mackay, Frederick P. Fish, E. J. Hall, Belvidere Brooks, William H. Baker and E. C. Bradley. This done, the Colonel called on Mr. T. Commerford Martin, editor of the *Electrical World*, as the first speaker of the evening. Apropos of the two hundredth anniversary of the birth of Benjamin Franklin then being celebrated in Philadelphia, in which observance Andrew Carnegie, himself an old time telegrapher, was taking a prominent part, Mr. Martin very appropriately confined himself largely to the discussion of the work performed by the distinguished savant of another age along the line of electrical experimentation, concerning which he went into many details of explanation. He also took occasion to refer in a facetious manner to the slow going propensities of the denizens of the Quaker City, who apparently had just waked up to the knowledge that this year marked the bi-centennial of Franklin's birthday, although as a matter of fact three months had elapsed since the correct date of the anniversary was reached.

The next speaker was Charles A. Coffin, president of the General Electric Company. Mr. Coffin, who appeared to be in a very earnest mood, referred with strong emphasis to the necessity of hard work and close application in the performance of duty by every one, especially the young, who would attain success in life.

President Chandler in introducing Mr. Abijah R. Brewer, secretary of the Western Union Telegraph Company, remarked that he had first secured the service of Mr. Brewer nearly forty years ago, engaging him at the time as a stenographer and telegrapher, an unusual combination of talent at the period, or even of any later date. Mr. Brewer gave evidence of his former close relations with Colonel Chandler, for in the course of his remarks he dwelt upon the early impressions he had formed of President Lincoln and of Secretary of War Stanton, derived from conversations held with Colonel Chandler and General

The promptness with which this important service was tendered elicited warm thanks, and was quickly made use of in the exchange of messages between President Roosevelt, Secretary of War Taft and with General Funston at San Francisco, the General being reached by a wire constructed by the Signal Corps men from the ferry house to the Presidio. The service thus rendered was never once interrupted during the entire trying ordeal. Over the direct wire to Mr. Barclay's office the company transmitted free bulletin service for several days, virtually for the press of the world. To such an extent did Mr. Barclay's office become the objective point of reporters, that the corridors adjacent thereto were besieged with newspaper men day and night anxious to obtain news concerning the great catastrophe, information which was generously furnished them.

When the magnitude of the disaster became apparent to the officials in New York the company immediately ordered large forces of operators from Portland, Seattle, Salt Lake City, Denver, Chicago and other cities to hasten to San Francisco with all speed to relieve the overworked force.

Mr. L. McKisick, electrician, and Mr. D. R. Davies, superintendent of construction of the western division, at Chicago, Ill., started immediately with a large force of experts for the stricken city to assist in the restoration of the full telegraph equipment. They took with them immense quantities of telegraphic material, including motor generators, telegraph instruments and Wheatstone automatic apparatus, which reached the point of destination at Oakland, Saturday afternoon, April 21.

The company's private car "Electric," which was also despatched to San Francisco from Chicago, was stocked to its fullest capacity with provisions, and proceeded to Oakland, Cal., conveying thither Mr. Frank Jaynes, the general superintendent of the Pacific Division, who had been in New York, and others connected with the service. Until adequate accommodations can be obtained in the city of San Francisco this car, together with a number of tourists' sleeping cars, will be the home of the officials and the men of the company engaged in the direction of the work of restoring order out of chaos.

Mr. H. S. Converse, the electrician of the Pacific division, with others connected with the service, was constantly on duty. In fact, all connected with the company appeared to render willing and loyal service in the hour of peril, no matter at what personal sacrifice, often two and three days of consecutive work being willingly performed.

The company has established a complete telegraph plant at West Oakland. The cables crossing the bay, as well as those underground in San Francisco, were tested and found to be in good condition.

It is expected that temporary headquarters in

the ruined city will be established within a few days in the partially damaged Merchants' Building. Up to the time of going to press the company has succeeded in opening ten offices within the limits of the burned city.

The officials of the Western Union Telegraph Company at San Francisco are as follows:

Frank Jaynes, general superintendent; F. H. Lamb, district superintendent; H. S. Converse, electrician; T. P. Smith, superintendent of construction; J. V. O'Brien, manager; J. W. Jeffs, chief operator; R. D. Weeks, wire chief operator; R. W. Gillette, night chief operator; J. A. Lowery, all night chief operator, and M. B. Brown, traffic chief.

THE POSTAL TELEGRAPH-CABLE COMPANY.

With the first intimation of trouble at San Francisco, Mr. W. C. Swain, assistant electrical engineer of the Postal Telegraph-Cable Company, quickly established a direct wire to the office of Vice-President E. C. Bradley, at the home office of the company, 253 Broadway, New York. This circuit, over which were transmitted message after message, keeping the executive officers informed as to the growing progress of the conflagration which set in coincident with the earthquake, and which were furnished to press associations and individual newspapers, was maintained until two P. M., when Mr. Swain and the entire force were obliged to abandon their quarters, the flames at that time enveloping the structure in which the Postal offices were located. On the following day the company established an office within the Oakland ferry house at the foot of Market street, thus once again opening a local office in the burning city. In the meantime the regular office at Oakland, of which A. J. Smith is the manager, was maintained as the San Francisco terminal. When the earthquake shock came Mr. L. W. Storrer, the general superintendent, was in Los Angeles. He immediately started for San Francisco, and arrived there the following night.

The anxiety felt by President Clarence H. Mackay for those in the employ of the company, at San Francisco, and his resolute determination to quickly reestablish full wire connection with that city, is shown in the following telegram sent to General Superintendent Storrer:

I cannot adequately express to you my feelings regarding the calamity that has befallen San Francisco. I trust sincerely that all is well with you and yours. The men in your division and all our people along the line have done magnificent work, and you may rest assured that the executive not only appreciates this, but that they and all concerned will be fully rewarded. Convey this to staff. I hope you will move heaven and earth to open communication to San Francisco, and thus relieve thousands from anxiety. Do this at any cost within reasonable bounds.

So great was the anxiety felt in New York city respecting the condition of affairs in San Francisco that the executive offices were kept open night after night, many of the officials themselves being in close attendance.

Eckert, when he entered the service of the telegraph company presided over by these two gentlemen, who at that time were themselves fresh from the war department at the close of the Rebellion.

At this point the following telegram, which received the unanimous approval of the club, was read and ordered sent to Mr. Carnegie:

New York, April 17, 1906.

Andrew Carnegie,
Care American Philosophical Society,
Philadelphia.

The Magnetic Club in banquet assembled to-night in New York, its members and guests, representative of the telegraphic and other electrical industries of America, requests you to associate it with the great celebration in honor of Benjamin Franklin, the first American electrician, congratulating the society, the university and the city of Brotherly Love on the great and glorious memory thus cherished.

A. B. Chandler, President.

To this telegram the following was received the next day in reply:

Philadelphia, Pa., April 18, 1906.

A. B. Chandler,
President Magnetic Club, New York.

Telegram received. Will be presented in due form. Very acceptable.

Carnegie.

The closing speech of the evening was that of Charles C. Adams, fourth vice-president of the Postal Telegraph-Cable Company. Mr. Adams was for twenty years a resident of Philadelphia, and his love for the place apparently had suffered no abatement, for he took occasion to pronounce a eulogy on the town, his remarks being actuated in part by what Mr. Martin had previously said. He paid high tribute to the sterling worth of the citizens of the historic old city of William Penn and of Benjamin Franklin, emphasizing the well established permanency of its business concerns and of its numerous other institutions, commercial, educational and otherwise.

At the guest table were: A. B. Chandler, president; C. C. Adams, A. R. Brewer, Charles A. Coffin, F. W. Jones, Alonzo Kimball, T. C. Martin, E. C. Platt, J. C. Reilly and F. G. Southworth. Among others present were:

Albany, N. Y.—W. H. Doherty, S. C. Rice.
Boston, Mass.—F. M. Ferrin, E. B. Pillsbury, C. A. Richardson.
Halifax, N. S.—S. Fenn.
Harrisburg, Pa.—C. E. Diehl.
North Sydney, N. S.—S. H. Strudwick.
Ottawa, Ont.—J. G. Davies.
Philadelphia, Pa.—L. Lemon, F. E. Maize, C. A. Stimpson.
Portsmouth, Va.—W. F. Williams.
Troy, N. Y.—I. W. Copeland.
New York—W. M. Anthony, A. H. Ackerman, W. J. Austin, T. A. Brooks, D. M. Bliss, C. E. Bagley, E. B. Baker, E. S. Butterfield, W. Begg, E. B. Bruch, C. P. Bruch, T. M. Brennan, D. J. Burns, W. G.

Burns, J. B. Bertholf, W. H. Brouwer, T. L. Cuyler, Jr., M. R. Cockey, J. B. Corss, C. F. Colyer, J. F. Cleverdon, W. Cleverdon, W. D. Chandler, A. D. Chandler, A. R. Carmichael, D. C. Cox, John Costelloe, M. M. Davis, B. M. Downs, S. S. Dickenson, J. J. Estabrook, A. P. Eckert, H. C. Entrup, J. S. Ellis, J. S. Evans, H. Fresenius, G. M. Foote, W. D. Francis, G. F. Fagan, J. H. Flood, W. L. Fort, William Finn, David Fuchs, R. E. Fagan, W. Geigen, William Gellatly, C. Gaffney, W. R. Harmstad, W. S. Hallett, C. Harmon, L. R. Hallock, G. W. Hickey, J. E. Hoey, Gardner Irving, F. W. Judge, S. F. Jones, H. T. Johnson, James Kempster, H. G. Kitt, Frank Kitton, M. J. Kenna, M. Lapointe, J. M. Lyons, A. Lockwood, J. F. McGuire, Frank Maier, G. F. Miller, R. J. Murphy, W. T. Mapes, George H. Messner, William Maver, Jr., S. B. Murray, C. H. Murphy, C. E. Merritt, William Marshall, D. W. McAneeny, F. W. Manger, N. Malpas, F. E. McKiernan, A. P. Morris, W. B. McCurdy, James Madden, H. J. Noller, J. F. Nathan, Benjamin Nachmann, M. J. O'Leary, H. G. Pierson, E. B. Pollister, F. Alsbury Pirie, Frederick Pearce, C. F. Pearce, A. L. Potts, E. W. Parker, R. C. Peckworth, C. H. Peckworth, H. Pryor, A. E. Price, G. F. Porter, H. B. Quick, T. F. Rochford, H. E. Roberts, J. J. Riley, C. Ruffer, E. J. Rankin, J. Rathbone, C. F. Rathbone, H. D. Stanley, Charles Shirley, W. E. Stewart, F. J. Scherrer, H. L. Shippy, L. A. Stuart, W. D. Schram, F. A. Scheffler, Isaac Smith, J. B. Taltavall, C. H. Tamlyn, W. G. Taylor, C. S. Tebbutt, G. H. Usher, W. B. Vansize, H. C. Van Ness, J. C. Willever, W. D. Willever, H. A. Wilkins, E. Whitmore, J. E. Walsh, H. F. White, T. C. Wood, H. S. Young, Jr.

The Northern Commercial Telegraph Company.

The Northern Commercial Telegraph Company will apply at the current session of the Dominion Parliament for an act authorizing it to extend its operations and undertaking throughout Canada; to increase its capital stock and for other purposes. The company was incorporated by an act passed in 1898, power being given to construct land telephone and telegraph lines in British Columbia and the Yukon Territory, and to connect the same by cables. Power was given in 1899 to construct branch lines and in 1900 the capital was increased to £500,000. The offices of the company are in London, Eng., and the incorporators were: Lord Thurlow, T. Van Puten, London, Eng.; E. Friedburg, described as "of the county of Surrey, Eng.;" W. Baird, W. Naismith, Vancouver, B. C.; A. Haley, Windsor, N. S.; I. Burpee, St. John, N. B.

The testimony of progressive operators is that **TELEGRAPH AGE** is so thoroughly comprehensive in character as to make it absolutely indispensable to those who would keep informed. Its technical articles are of high practical value. Write for a free sample copy.

Severe Arraignment of the British Telegraph and Telephone Systems.

(From the Montreal Gazette.)

A statement attributed to Mr. Henniker Heaton, M.P., in which he proposes a telephone for every house at a cost of a shilling a week, has evoked spasms of admiration from Canadian advocates of municipalization. There is no prospect of the people of Great Britain witnessing the realization of Mr. Henniker Heaton's dream. A telephone service at \$13 a year is a commercial impossibility. But it meets with acceptance among those who do not know any better, whose ignorance, in fact, extends to the belief that the government control of telegraphs and telephones in Great Britain has been a howling success from a financial point of view. It is true that they carefully omit any reference to the efficiency of the service supplied. As a matter of fact, not only is the service inefficient, but if it did not have the national treasury behind it, it would have been hopelessly bankrupt long ago. It is, indeed, almost as striking an example of the inability of governments to conduct a business enterprise as the Intercolonial Railway. A return made to Parliament the other day and covering the operations of the postoffice telegraphs, which includes telephones, supplies all the proof necessary for this assertion. According to this return the earnings of the department for the year ended March 31, 1905, were \$19,078,952. To earn this amount necessitated an expenditure for operation alone of \$23,553,842, a deficit of \$4,474,890. In other words to earn a dollar the British telegraph and telephone system spent \$1.24. If the amount of the interest charge on the capital invested in the department be added, the cost of earning a dollar of revenue would be increased to \$1.38. And if a reasonable allowance be made for depreciation, the cost of earning a dollar would be easily \$1.50. This condition of affairs is absolutely startling. Yet it is being held up to Canadians by those who do not know any better as ideal.

There are those, however, who while cognizant of the actual state of affairs, excuse it by claiming that the rates charged are so much lower than those in effect in Canada. So far as the telephone service goes there is no truth in this statement. The man in London, for instance, must pay the postoffice £5 per year for his telephone—and a penny for each call he makes. If the person he wants is more than two miles away he pays 2d. For an unlimited service he has to pay £17 per annum. Toll line charges appear low, but are deceptive. Thus, for a five-minute conversation with a person a subscriber to the National Telephone Company, residing 120 miles away, the charge would be 2s. 3d., about 80 cents. The same conversation with Ottawa would cost a Montreal man 80 cents. The same thing is true of the telegraph charges. The rate is 6d. for the first twelve words, and a half-penny for each subsequent word. Out of these twelve words

must come the address of the receiver, and unless a person is in business and has a registered address, this means that most of the 6d. goes for what the Canadian company sends free of charge. Thus the name and address of the receiver and the name of the sender might easily take up the whole of the twelve words allotted, leaving the receiver to pay a cent a word for the actual message, and bringing the total cost up to just about what a Canadian company would charge. As a matter of fact considering the density of the population and the comparatively short distances, the British telegraph charges should only be half of those charged in Canada, for the telegraph, unlike the telephone, shows decreases in operating expenses as the volume of business increases. A Canadian charge of double the British charge can be very easily justified when the higher cost of labor, equipment, capital and taxation is taken into consideration.

But this aspect of the situation is really unimportant. What signifies is that the British government is conducting at a cost of \$1.50 for every dollar's worth of revenue it receives from them, two public utilities which should be self-supporting.

Hon. Robert P. Porter, former United States census commissioner, in a letter from London, gives the figures as to the receipts and expenditures of the British government's telegraph monopoly. For the year ending March 31, 1905, the report for which was published two weeks ago, the expenditures exceeded receipts \$4,610,000. In addition, the government paid interest to the amount of \$1,358,500 on the debt of \$54,500,000 that was created when the telegraph lines were acquired. The total deficit was thus \$5,968,500 for the year. In 1870-71, when the telegraph lines were acquired, they showed a profit of \$1,710,000.

In 1885 the government reduced the minimum charge to sixpence (twelve cents), and since the deficits have been of regular recurrence, although it was predicted by the then postmaster general that the increase of business would make the business profitable. But since 1903 the number of messages, instead of increasing, has actually dwindled. Two reasons are assigned for this, the poorness of the service and competition from telephones. The telephone service, however, is also notoriously poorer than our own, and there is much complaint. The trunk lines between the cities are mainly owned by the government, but within the cities the exchanges are generally privately owned. The government service shows the weakness that seems inherent in government undertakings, and in the cities the private companies, threatened as they are with extinction, are not encouraged to make improvements.

If there is one country in the world where telegraph and telephone service should be good and cheap it is Great Britain. The population is dense, the people are active commercially, the

messages are transmitted a short distance, labor and supplies are cheap. Yet, charging as much or more per mile, notwithstanding the greater volume of business, there is a deficit on both the telegraph and government owned telephone systems, with nothing allowed for interest on investments or adequate provision for betterments. The policy of government ownership has descended, and for the benefit of those who use the lines a general tax is laid on the people as a whole.

The Flush Times of Nevada.

BY J. W. HAYES.

Nevada is one of the grandest, and it is destined to become, some day, one of the greatest states in the union. It has reared a number of men, who in later years have become identified with the progress of the telegraph and submarine cable. Notably is this the case with the late John W. Mackay, who has done so much to bring these great agencies of human civilization to their present efficiency.

As long ago as 1877, Mr. Mackay was wont to make the Western Union office at Virginia City, Nevada, his rendezvous after office hours, and every operator and messenger was on easy speaking terms with him. His friend, George Senf, recently deceased, familiarly known all over the Pacific Coast as "Graphy," was manager at Virginia City, and through his own sagacity as much as it was by Mr. Mackay's suggestions, amassed fortune after fortune, only to lose them again by unfortunate investments.

Virginia City, it may be remarked, is located on the eastern slope of Mount Davidson, overlooking a vast waste of country to the east. Mountain peaks are visible from this spot fully two hundred miles away.

Among the operators who came and went from Virginia City about this time were the following: A. B. McCoy, whom everyone affectionately called "Baldy;" William H. Murphy, Thomas W. Booth and his brother, A. J. Booth; Edgar B. Beecher, Egbert A. Brown, Edward Kearney, Eugene H. Sherwood, Samuel B. Rankin, Thomas J. Baldwin, James C. De Long, Newton L. Boydston, Andrew C. True, David Crawford, Samuel Kimber, John Skae, Robert Pixley, John Yontz, J. A. Morison, John G. Blake, and the writer. Of these, John Skae became a multi-millionaire, and for three years kept all the wise heads in the stock market a-guessing; but he died a few years ago at Tucson, Ariz., in straitened circumstances. Samuel Kimber, Robert Pixley and A. C. True also acquired large fortunes by judicious investment in mines.

Samuel B. Rankin was the chief operator, and was a genial, whole-souled man. There was a spirit of freedom existing in this office probably unknown in any other telegraph office in the world. I mentioned this fact in my book, "Tales

of the Sierras," in the sketch entitled "The President's Visit to Virginia City."

Of the people I have mentioned, many have passed on to their last home. These are: John Skae, Robert Pixley, John Yontz, George Senf, Edward Kearney, Thomas W. Booth and John G. Blake.

Thomas J. Baldwin, whom we all called "Lucky" Baldwin, was one of the most accomplished linguists in the profession, and would have been an acquisition in diplomatic circles. "Lucky" is still with the Western Union at San Francisco. A. B. McCoy is in the main office of the Western Union, New York; W. H. Murphy is in the cable service of the same company at New York, while Abe Booth is employed with a Wall street broker, and J. A. Morison is now in the New York "Sun" office. Newton L. Boydston, who is with the Western Union at Chicago, was also an accomplished scholar, miner and electrician. Eugene H. Sherwood is manager for the Postal at his old home in Fremont, O. Being stricken with paralysis some twenty-five years ago in San Francisco, he devoted much of his time to the study of music, and has achieved an enviable reputation as a performer on the guitar. Samuel B. Rankin was superintendent of the fire alarm in San Francisco until recently. David Crawford went north to Seattle, where he is in business in that bustling city. Egbert A. Brown mysteriously disappeared ten years ago from Portland, Oregon, and nobody seems to know whether he is dead or alive.

This sketch would not be complete without the mention of other well-known men, members of the profession who were located at different points in Nevada. There was Samuel W. Chubbuck, manager at Gold Hill, who had made and lost several fortunes, and who is now passing his declining years in peace and comfort in Oakland, Cal. James F. Farrell, a Canadian by birth, and one of the best of operators, was manager at Carson City. He died some fifteen years ago. Joseph Sears was a man well known in Chicago years ago. He was manager at Pioche, Nevada, and acquired a fortune, but died of pneumonia before he could enjoy it. His successor at Pioche was Alex. Morison. Joseph Heenan, cousin of the once famous John C. Heenan, of international pugilistic fame, was for awhile manager at Austin, Nevada, and was succeeded by George E. Millar, another old timer of the telegraph, known from Buffalo to the Pacific Coast. William Spinner was manager at Eureka, Nevada, in 1877, and I believe he is doing business at the same old stand yet. He was the most patient and painstaking man I ever knew. There was an operator at Diamond Springs in those days named Cox. No one knew where he came from or where he went after the office was discontinued. At one time during wire interruptions he worked continuously for seventy-two hours, relaying west bound business and exhibiting a degree of tele-

graphic ability that could not be excelled. Many thought he must be the original John Clark, incognito.

William D. Linton, an old time Atlantic and Pacific operator, was keeping a hotel at this time at Wadsworth, Nevada. He will be remembered by the Cleveland and Buffalo contingency of thirty years ago. Linton got rich developing borax mines in his adopted state. John L. May was manager at Winnemucca, Nevada. He distinguished himself during the recent trouble with Spain and was made a captain in the regular army, from which post he resigned to accept a position with the Southern Pacific as train despatcher. Peter A. Rowe, and his brother John, were manager and operator, respectively, at Elko, and were much in evidence on the line. James V. Lovell afterwards succeeded Peter Rowe as manager. His father, Peter Lovell, was the assistant superintendent of telegraph for the State of Nevada. He, too, has passed over to the great majority.

Frank Bell was superintendent at Reno, and a most active and energetic man. Ben C. Shearer was the manager at that point. Mr. Bell had no hesitancy about getting out and repairing the line in company with his humblest lineman. He afterwards served as warden at the state penitentiary, finally serving a term as Lieutenant Governor and Governor of the state. At eighty years of age he has retired from active work to his ranch in Butte County, California.

Most of the men I have mentioned were largely different from the general run of operators. They were enterprising, daring, men of large and strong physique, and with an education much above the ordinary.

Dr. L. M. Rheem Indulges in Reminiscence.

(Continued from issue of April 16.)

Dr. L. M. Rheem, of Minneapolis, Minn., who contributed such an interesting chapter in the April 16 number, relating to the telegraph fraternity as it existed in Omaha thirty years ago, his theme being suggested by an article written by J. W. Hayes, of Portland Ore., of similar character, in the preceding issue, continues his pleasant line of thought as follows:

"Cliff Mayne, whom Mr. Hayes mentions, worked the night trick for awhile about this time. This was Mayne's first advent to Omaha. He was one of the most beautiful penmen, as well as one of the most rapid writers I ever saw. That old Union Pacific No. 2 bothered him quite a little at first, as it was not only a long heavy wire, but was full of quips and fancies with which you had to become familiar before you could juggle the business successfully. The letters of the first part of a word used to catch on insulators, hang back for a while and then come in with a plunk all in a bunch; the operator had to sort them out and make a reasonable sounding message out of them. We all remember the frantic

search made for Mr. D. B. Bab. Mr. Mayne had received the message which was quite important. Service messages failed to relieve the situation, which Mr. L. H. Korty finally captured by deciding that the message belonged to Tibbals, the sleeping-car man. I don't know where Mr. Mayne is now; he was a brilliant fellow, and after 1881, when he left the telegraph service, he became one of the leading real estate men of the West, operating from Omaha to the Pacific Coast, handling deals away up in the millions.

"Then there was Charles Havens, who was chief despatcher; he was pretty busy with his trains, but used to mix into the Atlantic and Pacific business occasionally. He went into the coal business and became very wealthy before he died some years ago. Henry Loosley, Wesley Ellsworth, George M. Myers, F. W. Griffith and others, including the great American travelers, Bogardus and John Clark, both of whom are now dead; Frank Farley and William Foley were employed at the Union Pacific-Atlantic Pacific office at various times during this period. The only one of these whose location is known to me is Myers, who is a retired capitalist of Kansas City, Mo.

"At this time the city office at Omaha of the Atlantic and Pacific was up-town in a room six feet wide by twenty feet long; the manager was E. B. Hirst, who was a great student of natural history. He had a large collection of snakes, toads, lizards, etc., which had the run of the office. Hirst had trouble keeping his force filled, small as it was, for the reason that the snakes had a playful habit of taking up their quarters in some part of the clothing of the men, whose salary were not large enough to pay for the mental strain incident to their acting as zoological gardens.

"I relieved Hirst as manager and it took me quite a while to dislodge the snakes and other animals which he left behind him. As long as we occupied that office I was never quite sure whether I was a snake charmer or a devilled ham. Our city business was what you might call slight, for the reason that the frontage of the office was so insignificant that the public as well as myself had trouble in finding it. To remedy this difficulty, Mr. J. J. Dickey, our superintendent, moved the office up-town into a half basement under the 'Herald' office, where the city and repeating offices were consolidated and the Atlantic and Pacific started in as a business factor of the city.

"My 'force' there, if I remember correctly, consisted of Richard Lewis, one of the old Russian-American telegraph men, who I believe is dead; Aaron Hilliker and Ziegenfus, and I also recall Earl Rudd. Besides being fine operators, these boys were all specialists in different lines. Mr. Lewis possessed a quaint humor that was simply irresistible; as Mr. Hayes says, 'Hilliker was one of the greatest characters ever known in the profession. He was a born actor, a minstrel singer, a good newspaper man and a first-class telegraph

operator.' Ziegenfus was a character in his way; he was a most interminable talker, his specialty being to get some one in a corner and talk them into a state of collapse. Mr. Rudd was a genial gentleman in all respects; a good listener, and had an infectious laugh that helped to drive dull care away on all occasions.

"There was another man who was in the Union Pacific-Atlantic Pacific family for whom I shall always have the most affectionate remembrance. This was H. E. Jennison, the general foreman of construction. I know that my feelings for him are shared by every one who had any dealings or acquaintance with him. Any one who ever came in contact with him was a better man after it. Although quiet and unostentatious in all particulars, he was forceful in his methods, and had a faculty for solving successfully the many perplexing problems of construction always confronting him in the extended territory over which he had supervision. He was a hard student of electrical and construction matters, and many of the ideas originating with him are now in use in various parts of the country. He was also an interminable worker, always leading instead of driving his men. His death was due to this trait. He had a piece of complicated tunnel construction in hand in Colorado for the Western Union Telegraph Company, of which he occupied the position of general foreman for the third district. He went into the tunnel with the men to direct the work, was overcome by gas and taken out dead. His death occurred March 26, 1897.

"There is always an element of heroism for me in the death of any man who dies in the discharge of his duty, no matter how peaceful the pursuit in which he is engaged may be. It is not so very much of a trick for a man to perform an act of bravery while the band is beating out the inspiring strains of a Sousa march and the eyes of a thousand people are upon him. A big yellow streak in him is often entirely obliterated by the mediums mentioned. But when I hear of a man going calmly into a place of danger simply because it is his duty, I always feel that he should receive the crown of laurel instead of the cypress. For Jennison, 'Requiescat in pace.'

"I always also remember John Viau, the distinguished French gentleman, whose specialty was 'lookin' fer de trub.' Mr. Viau was never happier than when he had an opportunity to put on the 'hooks' and knock out a complicated cross. His explanations of how, where and when he found it, and how he 'knock heem out, by Gar,' were epics. I would enjoy meeting 'Johnnie' as much as I would any of the old boys, if he is on this side of the Great Divide."

(To be Continued.)

TELEGRAPH AGE should go regularly to every one interested in the telegraph. Write for a sample copy.

Practical Investigation of the Sulphate of Zinc Storage Battery.

A long and critical examination of the zinc sulphate storage battery is made by M. R. Lacau in the "L'Eclairage Electrique," of Paris, and which has been abstracted by the Electrical Review, of New York. This battery usually consists of zinc, sulphuric acid and lead peroxide. Other metals may be used in place of lead for the positive plate, but they are not as good. The zinc employed should be pure, and may be amalgamated, and is obtained generally by electrolysis from a solution of zinc sulphate. A good many difficulties are encountered in caring for these cells. They are very sensitive to impurities introduced in the water, such as salts of iron, calcium, magnesium, chlorine, etc., and the zinc becomes contaminated by impurities introduced in the lead plate, such as antimony, arsenic, tin, etc. For these reasons it is essential that the positive plate be made of pure lead and not of any alloy. Although the main argument for these storage batteries is the larger output obtained for a given weight, in practice it is found necessary to use a good deal more electrolyte than is called for theoretically, so that although the plates themselves may be light, the cell as a whole is comparatively heavy. If less electrolyte be used the viscosity is too great, thus reducing the rate of discharge and crystallization of the sulphate takes place. Moreover the presence of free acid diminishes considerably the solubility of the zinc salt. Another difficulty is the limited height permissible for the negative plates. If they be more than fifteen centimetres high the difference in density of the electrolyte due to gravity sets up local action. The author has found that it is not practicable to produce a zinc-lead cell having a greater output than thirty watt-hours per kilogramme of total weight, while, as is well known, the lead cells may give thirty-five watts per kilogramme. The zinc cells have a good efficiency and they may be constructed so as to hold their charge well.

Herbert Laws Webb, the well-known electrical expert, and author of works on telephony, has this to say in a recent article in the London Times: "In Europe the telephone service has never been treated as a legitimate business enterprise, and has never had a fair field. From the very beginning it has been treated as a mere offshoot of the telegraph—which it is not—and it has occupied the position of Cinderella in the family of methods of communication placed under government control. As a result, not only have all sorts of harassing restrictions inseparable from a bureaucratic control been brought to bear, but telephony as a science, telephone engineering as a specialty and telephone administration as a distinct branch of organized effort have been neglected."

International Telegraph Tournament at Boston.

In a recent conversation held with a prominent New York member of the telegraph fraternity, a gentleman who is likely to take part in the coming Boston telegraph tournament, he had this to say:

"In regard to the telegraph tournament proposed in Boston for June 8, I beg to submit a few observations born of experience. TELEGRAPH AGE is in a position to feel the pulse of telegraphers and I trust what I may say will bring forth expressions on the subjects that I may touch upon.

"Tournaments of the past have almost invariably been conducted as best the promoters knew how but without profiting by the mistakes of their predecessors. Judges are selected because of the illustrious names they bear, because they are known to be honest and their membership on committees will lend dignity to the occasion. It is no reflection upon these gentlemen to say, if they are not actively engaged in high speed telegraphy, that they are unfitted through long inactivity to judge of the work of men who send Morse above fifty words per minute. Even one such old-timer whose position in the world may be high, when placed on such a committee with men who are working at the key, naturally sways the opinions of his less illustrious and less fortunate co-judges. Hence it is a prime necessity that every judge on the active list should be selected for his ability to pass upon high class work, as well as for his honesty of principle. Few men to-day who have not been actively engaged in telegraphy—in press or bonus or brokerage work—even for a year, are capable of reading Morse at fifty words, yet experts know that it can be sent with commercial value at fifty-five. The trouble is with the ears which have slowed down through inactivity, not with the Morse which has quickened with practice.

"Now a word regarding medals and cups. Doubtless the gentlemen who give these prizes would as lief or rather give gold watches or diamond rings which would be of real use. They are usually solicited and the custom seems to be for the solicitors to mention a cup or a medal. The possession of either is honorable and ornamental, but a watch or a ring is just as honorable and far more serviceable. Then let us have more watches and rings or money, if you will, and less of cups and medals in future. It cannot be considered looking a gift horse in the mouth to make such a suggestion, because a broad-minded man knows it is simply a better understanding of tri: matter, which brings it.

"We have established records for the world's championship. In 1898 it was the old "Command of Gideon" matter, of which William M. Gibson sent 248 words in five minutes. In 1893 the same record had been made by Frank Catlin and F. J. Kihm. In Atlanta this record was beaten by both McClintic and Bruckner, the former sending 252 and the latter 251½ words, of the same matter. For the championship, however, new matter was used, and a new distance established. The time was doubled, making

championship work include a qualification of receiving straight Morse, five minutes, and ten minutes sending straight Morse. The record established—517 words—was ignored in Philadelphia, as was the time-honored "Command of Gideon," because it was "known" matter and some operator might have taken advantage and been practicing on it since the last tournament. If a fellow has so much perseverance, why not let him have the opportunity to win laurels with it? Why not take the "Command of Gideon," for instance, or the matter used at the first annual tournament in Atlanta in the Carnegie medal contest, as a standard, or select new and suitable matter and perpetuate it as a mark for succeeding generations to hit at? There should be some established record which we should strive to excel. Taking new matter and establishing new distances in each tournament mixes us all up and does not give a line on whether we are improving or retrograding. In New York, May 14, 1898, H. V. Emanuel, of Philadelphia, established a record for thirty minutes receiving messages. He clinched the title in Atlanta and lost in Philadelphia to J. P. Gallagher by a close decision, but the fact that the same class was adopted by all three tournaments gave the fraternity a basis for judging the merits of such work from 1898 to 1903, and it had improved. The same messages should be used and the same identical class incorporated in every tournament. Side classes of from a minute to eight hours may be worked in, but these championship classes should be maintained always as a standard. A telegrapher, whether he be a commercial man, bonus, press or broker, is capable of sending and receiving straight Morse just as well or better than he is of handling telegrams. His particular specialty may be either of the four and he may be excellent in that class, but he can always transmit straight matter just as fast or faster, and receive it, too. For that reason, why ask a press operator or a brokerage operator who has been as fine as the finest, perhaps, at receiving and sending messages, before he was promoted to work just as difficult but more remunerative, and widely different from handling commercial telegrams, to include the sending and receiving of messages with the sending and receiving of straight matter to win a championship, as was the arbitrary ruling of the Philadelphia officers when McClintic, who had won in Atlanta by straight work, was forced, on short notice, to defend his prize in a different manner from which he had won it, including message work from which he had long since been separated.

"If we are to have a definite, permanent organization to hold tournaments at stated periods, it is all very well to have the Carnegie medal or some other suitable trophy as a permanent inspiration. On the other hand, there is no regularity to the thing and the medal won in Atlanta by McClintic and taken from him by Gibson in Philadelphia should be given to the telegrapher who can first win it three times, whether successively or otherwise, or else it should be given outright to its next winner. As the

two former winners have an equity in the medal, however, this latter course hardly seems fair, and the three-time winner is the better one.

"It is to be hoped that free discussion of the subject may be had, so that the Boston promoters may have the benefit of fraternal opinion in their undertaking."

Charging and Discharging Storage Batteries.

The "Western Electrician" has this to say relative to the charging of a storage battery for the first time, and also how the battery may be discharged completely without danger of injury, subjects that are of interests in telegraph circles:

With a voltmeter and ammeter in circuit, start charging with a small current, which should be about one-third the normal output and be continued for about four hours. Then increase to normal current and leave this on for about twenty consecutive hours or until the positive plates get a dark-brown color, unless the cells begin to boil and the electrolyte get milky. It is a good plan to continue the charge still longer at a lower rate, gradually reducing the current.

Some care should be exercised in discharging a cell to put it out of service. If the cells are to be put out of commission for several weeks the plates should not be allowed to stand in the electrolyte unless a small charge and discharge be given at intervals, say once a week. When they are to be unused for a considerable length of time they should be charged slowly, then discharged for a couple of hours at normal rate. Then the electrolyte should be drawn off and the tanks immediately filled up with pure water. The discharge is then continued at about one-half normal rate until the voltage becomes very low, say one-half volt. The plates must then be washed thoroughly in running water, allowed to soak twenty-four hours in water and then dried. In order to get the cells to discharge with the pure water for an electrolyte they must be short-circuited.

Directory of Annual Meetings.

Association of Railway Telegraph Superintendents meets at Denver, Colo., June 20, 1906.

Commercial Cable Company meets the first Monday in March, at New York.

Gold and Stock Life Insurance Association meets the third Monday in January, at New York.

Great North Western Telegraph Company meets the fourth Thursday in September, at Toronto, Ont.

International Association of Municipal Electricians meets at New Haven, Conn., on August 15, 16 and 17, 1906.

Magnetic Club, business meeting, meets the second Thursday in January, at New York.

Old Time Telegraphers' and Historical Association meets at Washington, D. C., October 9, 10, 11, 1906.

Postal Telegraph-Cable Company meets the fourth Tuesday in February, at New York.

Telegraphers' Mutual Benefit Association meets the third Wednesday in November, at New York.

Train Despatchers' Association meets at Buffalo, N. Y., in June, 1906.

The stockholders of the Western Union Telegraph Company meet the second Wednesday in October, at New York; election of officers occurs on the third Wednesday in October.

John Farson's Happy Recipe.

"The millionaire who is unhappy and never smiles would be just as unhappy and without smiles if he were poor. It is a matter of temperament."

This is John Farson's judgment of his brother millionaires. Farson is president of the National Automobile Association. Here is one of his recipes for happiness:

"Live in the open air, think kindly of humanity and make friends. The same care should be used in investing money to bring happiness as is used in investing it to bring in more money. How foolish it is to think that you can get good returns on Happiness Preferred by slinging in your coin any old way any old time. You have to watch the happiness market just as closely as you watch the market of tape and ticker. That's what brings results.

"The trouble with the millionaires that are unhappy is that they are the kind of men who would be unhappy whether they had \$10,000,000 or only 10 cents. That a certain millionaire is unhappy doesn't necessarily indicate that he is unhappy because of his wealth. Wealth doesn't sour a man; he has to be sour by nature.

"The contented man is the happy man. The contented millionaire is the happy millionaire. The contented pauper is really happier than the sour, discontented millionaire.

"But I don't mean to say that every one ought to be perfectly contented all the time. That would mean that the world would stand still. Isn't there a poet somewhere I have read that speaks of a noble discontent? Sure. There is a kind of discontent that means progress, but it is mightily different from the discontent that makes you sour, and dry, and warped, and causes you to look with suspicion on every human being you meet."—Moody's Magazine.

Opening of the Electrical Club.

The Electrical Club, of New York City, opened its doors to its members and invited guests on Saturday, April 21, at its clubrooms on the third floor, 14-16 Park place. These clubrooms occupy the entire third floor of the building and are very conveniently arranged for the purposes of the club, which are to provide downtown lunching facilities for the electrical fraternity. The officers of the club are J. P. Hall, president; H. L. Shippy, vice-president; Charles P. Scott, treasurer, and R. B. Corey, secretary. The club begins its career with a very excellent list of 150 members.

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of TELEGRAPH AGE, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

No up-to-date telegrapher can afford to be without TELEGRAPH AGE. It furnishes him with information essential to his welfare. Send for a sample copy.

Book Notices.

"The Telegraphist's and Telephonist's Note Book" is the final outcome of a purpose in bookmaking long entertained by its English author for the handy requirements of employees in the telegraph, telephone and railway services. Its contents cover a wide range of subjects of interest to the classes named, inasmuch as it presents solutions of problems met with in everyday practice. Price seventy-five cents. For sale by J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

"Wireless Telegraphy" is the title of a bright little volume of 174 pages that has just made its appearance in England, written by William J. White, of the engineer-in-chief's department of the general post office, London. The author has gone into his subject with evident care, and the discussion of wireless telegraphy and of the several systems now in vogue are invested with much interest. The volume contains fourteen chapters and eighty-six illustrations. Price seventy-five cents. For sale by J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

The "A B C of the Telephone" is a book valuable to all persons interested in this ever-increasing industry. No expense has been spared by the publishers, or pains by the author, in making this the most comprehensive handbook ever brought out relating to the telephone. The volume contains 375 pages, 268 illustrations and diagrams; it is handsomely bound in black vellum cloth, and is a generously good book without reference to cost or price. Orders and remittances (price \$1.00, express prepaid), should be made to J. B. Taltavall, Publisher Telegraph Age, 253 Broadway, New York.

The twelfth edition of that standard work of Abernethy, on commercial and railway telegraphy, theory and practice, including railway station and express service, arranged on the plan of questions and answers, more than maintains its previous reputation. Revised and enlarged, it affords an excellent study of the telegraph both in its commercial and railway aspects, a guide and help to workers in this broad field of the telegraph of the utmost importance, for the general subject is handled with a minuteness and intelligence rarely reached. The enlarged volume contains 424 pages, and is fully illustrated. Price \$2.00, which includes express delivery charges. Address orders to J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

Wireless Telegraphy and Telephony, by Prof. Domenico Mazzotto, translated by S. R. Bottone, is the title of a new work, the object of which is to present to the readers in as simple a form as possible the principles on which the wireless system of signaling is founded, and to describe the apparatus required. It also follows step by step the progress of different inventors who have re-

vised wireless systems, and it traces chronologically the progress made in wireless telegraphy from the first experiments of Marconi at Bologna to the last results of transatlantic wireless signaling. It contains 416 pages and 253 illustrations; price \$2.50, express charges prepaid. Orders should be addressed to J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

"Telegraphy" is the title of a book which gives a detailed exposition of the telegraph system of the British post office, the author being T. E. Herbert, A.M., engineer of the English telegraphs. It embodies a description of the telegraph practice of Great Britain, which is full of interest. Land telegraphy, its systems and apparatus, and the construction of underground lines, are elements of telegraphy alone considered, submarine and wireless telegraphy not being touched upon. To this general consideration of the subject, twenty chapters are devoted, two additional chapters treating respectively of the construction of aerial lines and of the construction of underground lines. Both will be read with special interest. A full description of the Murray automatic system, which has been adopted by the British Government, appears in the appendix, together with much other interesting matter. The comprehensiveness with which the author has handled his theme may be judged when it is said that the volume contains over 900 pages, the illustrations numbering over 500. The price of the book is \$3, including postage. Address all orders for the book to J. B. Taltavall, "Telegraph Age," 253 Broadway, New York.

"Maxwell's Theory and Wireless Telegraphy" is a new volume fresh from the press. It is divided into two parts, one being denominated "Maxwell's Theory and Hertzian Oscillations," by H. Poincaré, translated by Frederick K. Vreeland; two, "The principles of Wireless Telegraphy," by Mr. Vreeland. The volume is comprehensive in its scope of the subject considered, giving a physical treatment of Maxwell's theory and its applications to some modern electrical problems, from which a practical understanding may be derived of the essentials of wireless telegraphy. The book is a welcome contribution to the literature of the subject discussed. It has 255 pages, 145 illustrations, and a very full index; price, \$2.

Baltimore Telegraphers' Mutual Aid Association.

The fifteenth annual meeting of the Telegraphers' Mutual Aid Association of Baltimore, Md., was held April 10. The following officers were elected: President—E. S. Anderson; vice-president, Miss Jennie Keplinger; treasurer, A. Grape; secretary, J. C. Hawkins; directors, E. S. Anderson, C. E. Clagett, Ferd. Miller, A. K. V. Hull, S. T. Shutt, H. F. Meister and J. C. Hawkins; auditing committee, William Lepper, George Kelly and William Taylor; examiners, I. Hess, Jr., and F. F. Basye.

After the meeting a banquet was served, which was enlivened by remarks from the different members.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

ST. LOUIS, WESTERN UNION.

Mr. B. E. Black, who worked the first Chicago wire at the Merchants' Exchange, besides other heavy wires, including The Associated Press and Globe-Democrat's leased wire, has been appointed traffic chief, vice Mr. P. A. Peterson, who has been made solicitor.

Mr. L. N. Boone, Mrs. Gartner and Daniel Kelley have returned from Hot Springs, Ark., to which point they were assigned during the races.

The Telegraph Clerks' Aid Society defeated recently the operators of this office in a ball game, the score being 10 to 9.

Mr. Wm. Frohoff from Sedalia, Mo., is a recent acquisition to the operating force and Frank Sassenroth and W. P. Bennett, have gone to Chicago.

Gov. Joseph W. Folk was a recent visitor at this office and was much interested in the Barclay system of printing telegraphy, and the Yetman and Vibroplex transmitters, the workings of all of which were carefully explained to him.

The wedding on April 17 of Ray Alger and Miss Virginia Kaut, was attended by a number from the operating force who presented the couple with a beautiful gift.

PHILADELPHIA, WESTERN UNION.

The Electric Aid Society's annual ball and banquet which took place Wednesday evening, April 18, was the most successful affair of the kind from every point of view of any the society has ever held. The attendance was large and select. Many prominent people, outside of the mystic shrine of dot and dash makers, were present, among them being Mayor Weaver. He made a fine speech when he presented to ex-President Frank E. Maize, in behalf of the society, a handsome silver loving cup as a testimonial of their esteem. Mr. Maize, who was deeply affected, could not readily find words to express his surprise and appreciation. President A. S. Weir, C. B. Wood, R. C. Murray, Jr., and others made short but happy references to the presentation, after which dancing occurred, later a sumptuous repast being served.

Rodney Smith of this office will sail for Europe on the Oceanic some time in June, where he will spend several months.

Miss Fannie Schott, who left some months ago to locate at Los Angeles, Cal., has again returned to this office.

Mr. Daniel Carlin has resigned to accept a position with the Carnegie Steel Company, this city.

Recent arrivals are: J. H. Eirich, John Allen, and H. Whitehead from the Philadelphia, Reading and Pottsville Telegraph Company, and Messrs. Dolan and Whitlock from the Postal Company.

A. H. Sprecklin, of this office, the quadruplex expert, was absent recently owing to a severe attack of rheumatism.

PHILADELPHIA, POSTAL.

Mrs. Celia Powers and John Kramer have resigned to accept positions with the Western Union here.

Now that the curiosity has, in a measure, worn off, our boys are beginning to entertain an established regard for the usefulness of the Phantoplex circuit on our Pittsburg local.

Since the appointment of Mr. Chas. Slaymaker to the position of collector, Mr. J. J. Quinn, the former incumbent, has been given a clerkship in the manager's office, vice Chas F. Myers, Jr., promoted to a place in the superintendent's office.

Affability and capability are two conspicuous qualifications of Mr. Cyrus Moffett, recognized by the merchants of the North Third street district, as shown by the manner in which they patronize his office.

While passing through this city on his return to York, Pa., Manager S. J. Pickering stopped long enough to make calls.

CHICAGO, WESTERN UNION.

The following is the list of operators and chiefs who were sent to San Francisco to help out when communication was re-established with that city after the disaster: Frank Likes, wire chief; F. G. Gardner, quadruplex man; J. W. Coakley, electrician; operators, L. M. Carroll, Patrick Harrington, J. F. Brown, William Otto, T. L. Flynn, William Burley, J. Carter, Carl Congdon, A. R. Burnite, Lewis Price, R. A. Drake, C. A. Willis, and J. J. McCormick. They left at 11 P. M., April 19. Mr. Likes was made the custodian of \$216, a sum contributed by day and night operators here for suffering operators at San Francisco.

Ernest Herman has returned from the Standard Oil Company, where he had been assigned for the past two weeks.

J. F. Costello of the all-night force, is sojourning in Hot Springs, Ark., for two weeks.

Division Chief Charles White, who has been in the Southwest for several months for his health, is back again.

Edward A. Clark of the night force, who recently underwent a painful operation at the Homeopathic hospital, is recovering slowly.

Lewis J. Auld, formerly of this office, and late

of Bartlett, Fraser and Company, is employed by the government at Portland, Ore.

NEW YORK, WESTERN UNION.

Mr. A. A. Offutt, of the Eastern division, while crossing Sixth avenue at Eighth street recently, was struck by a trolley car, but fortunately escaped with a few bruises and a general shaking up.

Mr. Thomas H. Grady, for many years connected with this department, died on April 16, after a lingering illness.

Mr. H. J. Dunn, traffic chief of the South-western division, has been granted a leave of absence.

Miss Cynthia Smith of the tariff and check bureau, died suddenly on April 15. The funeral service was held at her late residence in Brooklyn, the interment being at Binghamton, N. Y.

Miss Abel, of San Francisco, who worked in this office but one day, upon hearing of the disaster at her home immediately started for that city, where her relatives reside.

Mr. Sidney Shirley, a veteran of The Associated Press, and now connected with the Boston Globe, recently paid a visit to this department and enjoyed a pleasant hour with many old friends.

The recent disaster in San Francisco caused an enormous volume of business, and every member of the force cheerfully responded to the unusual demands made upon him.

Mr. Robert McCartney, of Chicago, was a recent visitor.

Mr. Lawrence Keating, of this department, was badly injured about the back and spine, a few days ago at Coney Island, he being struck by a trolley car.

Henry Holland, aged seventy-three years, manager of the branch office at the Maritime Exchange, covering a period dating back prior to the Civil War, died April 18 at his home in this city of pneumonia after an illness of but five days. When Mr. Holland began his telegraph career semaphore signals were in use in connection with the marine service. He was well known to the shipping fraternity and was one of the oldest, if not the oldest, telegraphers actively engaged in the service in New York city.

Ancient "23," the current saying of the day, the following is told: One of the lady chiefs in the City Line had occasion to give a male member instructions to answer on a wire recently, and the following conversation was overheard:

Operator—Am clear on that wire; anything further?

Chief—Yes, 23, please.

At this juncture the operator hastened towards the door and the chief, in surprise, inquired whither he was going.

Operator—Did you not tell me to beat it.

Chief—Why, not at all, sir; please answer on 23.

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NEW YORK, POSTAL.

Mr. J. Smith has been appointed manager of the 11 West Twenty-eighth street office.

The branch office located at 182 William street, presided over by Manager J. F. Shugrue, is now being removed to the corner of Gold and Spruce streets.

Mr. J. S. Martin has been appointed manager of the 147 East Twenty-third street office, vice R. Jacobs transferred as manager to the office at 570 West Thirty-fourth street.

The entire operating force is overwhelmed with business growing out of the San Francisco disaster, and all are cheerfully working day and night in order to relieve the congestion in California.

Following are the results of the exhibition of sending messages, straight and coded press matter, at the "smoker" of the Commercial Telegraphers' Union of America, New York Local 16, Friday evening, April 20, for the sick benefit fund:

Sending fifteen messages: J. P. Gallagher (using Yetman transmitter), time 9.08; C. P. West (using Mecograph), time 8.10; R. I. Smith (using Vibroplex), time 9.20.

Sending straight press (five minutes): F. M. McClintic (using Lefley key), 226 words of the matter used in Carnegie Medal Class, Atlanta, 1902.

Sending Phillips code (five minutes): George W. Conkling, 323 words new matter.

Demonstration of the Shirley key: Daniel W. Russell sent four complete messages in three minutes.

Sending straight press (five minutes): P. A. Gersbach (using Autoplex), 215 words.

When in need of dependable typewriters correspond with me. Send a self-addressed stamped envelope and get a Gibson (Billy) picture.—D. A. Mahoney.

OTHER NEW YORK ITEMS.

Assessment No. 448 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of John A. Blattan at Baltimore, Md.; Joseph H. Kelly at Lebanon, O.; George F. Witten at La Junta, Col.; George Farnsworth at Detroit, Mich., and Walter C. Gamwell at West Brookfield, Mass.

Death of William A. Rudd.

William A. Rudd, manager of the Western Union Telegraph Company at Boston, died in that city on Friday evening, April 13, at the Boothby Surgical Hospital, death being due to the effects of an operation performed upon him for gall stones. While he had been a sufferer from this trouble for some time he had attended to business to within a week of his demise, so that his end was sudden and came as a great shock to his friends. Mr. Rudd left a wife and son, the latter being manager of one of the larger branch offices in Boston. The interment was at Menominee, Wis. He was a prominent Knight Templar, and a member of the Aleppo Temple, Mystic Shrine, of Boston. In the death of Mr. Rudd the telegraph profession has lost one of its best representatives. He was a man possessing moral force of character, an energetic nature, fine executive capacity, the attributes of a model manager. His ability for organization enabled him to bring the Boston office up to its present high standard of efficiency. Of kindly instincts, gentlemanly in deportment, he held the esteem of his subordinates to a notable degree, and none will more sincerely mourn his loss than they of whose interests he was always considerate. Because of his desire to satisfy and render superior telegraph service, his relations with the business community of Boston were most cordial, as they were also with the company which he so faithfully served.

Mr. Rudd was born at Madison, Wis., on January 29, 1857. Originally in the railroad telegraph service, he became an employee of the Western Union Telegraph Company, serving at various points in Wisconsin and Michigan, working his way steadily upward until he became manager of the office at St. Paul, Minn., a position he continued to fill with conspicuous ability for twelve years. In 1903, however, he resigned to accept the management of the Memphis, Tenn., office of the Postal Telegraph-Cable Company. Early in 1904, he was recalled to the employ of the Western Union, and placed in charge of the Boston office.

Mr. Rudd measured fully up to the requirements demanded of him; he shrank from no responsibilities; hard work presented no discouragements; he overcame and mastered difficulties. Throughout his career Mr. Rudd was a steadfast friend of TELEGRAPH AGE, and acted as its agent wherever he was stationed. Dead at forty-nine years of age, his passing awakens a profound regret that will be felt by many and in many places.

DEATH OF WILLIAM S. LOGUE.

William S. Logue, the general sales agent of the Edison Manufacturing Company, New York, died in Chicago, April 25. He went west April 16 on business, apparently in his usual health, but on Sunday, April 22, he was suddenly stricken with the illness which so quickly proved fatal. Mr. Logue was born at Frederick, Md., on June

26, 1847. Early in life he learned telegraphy, and in 1863 entered the United States Military Telegraph Corps, in which department of the army service he remained until the close of the Civil War in 1865. He then entered the employ of the American Telegraph Company, at Baltimore, subsequently serving in turn many of the various commercial telegraph companies of the period, until 1886, when, abandoning telegraphy as an occupation, he entered the employ of Thomas A. Edison, at Orange, N. J., with whose interests he had since been identified, and in which he rose through progressive promotions to the position held at the time of his death. Never of robust strength, he yet gained a thorough mastery of the business in which he was engaged, and with his genial, lovable and always companionable nature, attributes of character that proved valuable to him throughout life, for he not only made friends and customers, but was enabled to hold them.

The interment was at Baltimore, Md.

OBITUARY NOTES.

Frank M. Mahan, formerly employed by the Western Union Telegraph Company at Albany, N. Y., died at that place on April 20.

Percival K. Jones, aged fifty-six years, a prominent New York telegrapher about twenty-five years ago, died at Rochester, N. Y., on April 18.

H. E. Hawley, vice-president and general manager of the Hudson River Telephone Company, Albany, N. Y., died at that place on April 26.

Charles W. Johnston, chief operator of The Associated Press in Detroit, died of heart failure at Clinton, Mich., on April 11, while on a visit to his mother.

J. M. Faulkner, aged twenty-five years, for many years manager of the Western Union office at Middletown, N. Y., died at Southern Pines, N. C., on April 10.

Thomas E. Walsh, aged fifty-eight years, died at Susquehanna, Pa., on April 7. Mr. Walsh was manager of the Western Union Telegraph Company, and wire test operator at Susquehanna for over thirty-five years.

Robert J. Sheehy, aged sixty-four years, a telegraph and electrical inventor and expert, well known to the electrical fraternity throughout the country, died in New York, on April 26, as the result of an operation.

W. B. Dougall, Jr., aged thirty-six years, formerly manager of the Deseret Telegraph Company, of Salt Lake City, died April 10. He was the son of W. B. Dougall, who was the general manager of the Deseret company up to the time of its being taken over by the Western Union Telegraph Company, about three years ago. Mr. Dougall's mother was a daughter of the late Brigham Young.

Wireless Telegraphy.

The stockholders of the Marconi Wireless Telegraph Company on April 16, elected Cuthbert Hall, Major Samuel Flood Page and James N. Greenshields directors to serve for five years.

The new Hotel Belmont in New York city will be the first hotel in the world to have a wireless station. The staff to be erected on the top of the building by the American De Forrest Wireless Telegraph Company is to be 150 feet in height. The building is 300 feet high.

Repeated attempts were made April 18 by the Navy Department to get news of the San Francisco disaster by means of wireless telegraph, but without avail. The navy has a station on Goat Island which is in San Francisco Bay, and has another station on the Farallone Islands, and a third at Point Arguella, near Port Harford, on the California coast, through which it was hoped communications might be established by means of the other two stations with transcontinental telegraph lines. The telegraph communication to the station near Port Harford has not been completed, however, and attempts to get wireless dispatches through were unsuccessful.

The Chinese Government has arranged to establish several stations throughout China for experiment with Marconi's system of wireless telegraphy and instruct Chinese operators in working the same. The apparatus has been installed on four Chinese men-of-war at Shanghai and at the three north China cities of Tientsin, Peking, and Paotingfu, the radius of action being about two hundred and thirty kilometers. An Italian officer has been appointed, not only as instructor, but also as engineer to superintend the installation, and under whom a number of students have already been detailed to act as operators and learn the art of management. It is also said that the viceroys throughout the empire have been directed to consider the advisability of establishing other stations to work in conjunction with those mentioned.

During the twelve months ended January 31, 15,076 messages, comprising 203,276 words, were sent and received by the American Marconi Wireless Telegraph Company alone and through its ship and shore stations. During the same period, 1904-1905, 8,314 messages containing 122,424 words were sent and received. These figures do not include the operations of the stations controlled by the English, Belgian, French, Canadian and Italian allied companies. The completion of the new station at Sea Gate, Coney Island, in January last gives an unbroken chain of stations owned and controlled by the Marconi system from New York harbor to Cape Race, N. F., by means of which vessels entering or leaving New York harbor are in constant communication day and night for about seventy hours. Thus, a vessel outgoing, on leaving her dock, takes up Sea Gate, carries this station until communication is estab-

lished with Babylon, carries Babylon to Sagaponack, Sagaponack to Nantucket, Nantucket to Sable Island, Sable Island to Cape Race. Each of these stations is connected with the land lines, so that messages are sent to or received from every part of the United States, Canada, and, indeed, the world. The long-distance station at Cape Cod has according to John Bottomley, who makes this report to the stockholders of the company, transmitted and received messages across the ocean without any relay whatsoever. News and commercial messages are constantly transmitted from this station to vessels 1,700 miles away. At present out of about seventy vessels trading regularly across the Atlantic, which are equipped with Marconi instruments, thirteen are fitted with long-distance receiving apparatus. It is predicted that in a very short time these vessels will be in constant communication with land during the entire trip across the ocean.

Orders, if sent to Telegraph Age, Book Department for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

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Kingston, Ont.

(Communicated.)

Kingston is the West Point of Canada, with its military college, its massive grey stone forts, its Martello towns and imposing public buildings. It is beautifully situated at the foot of Lake Ontario, at the head of the St. Lawrence river and at the mouth of the Rideau or Great Cataraqui river, which, with the Rideau Canal, connects it by waterway with Ottawa. Kingston is an industrial city as well as a shipping point of great importance. Among the leading industries are: The Canadian Locomotive Company, the Dominion Textile Company, and the Davis Drydock Company. At Kingston is also located the government dry dock, the largest on the Canadian side of the Great Lakes. Closely lies the sinuous channels of the famous archipelago of the Thousand Islands, visited annually by hundreds of tourists from both Canada and the United States. At Kingston the Great North Western Telegraph Company has an office, fully equipped for all branches of the telegraph service, and from which communication can be had with upwards of 49,000 places in Canada, the United States and Mexico. Tourists and others should remember that the Great North Western Telegraph Company is the only company having an exclusive connection with the Western Union Telegraph Company.

Municipal Electricians.

The published proceedings of the tenth annual convention of the International Association of Municipal Electricians, which was held at Erie, Pa., August 23, 1905, has made its appearance. Within its nearly 200 pages, a complete detailed report of the convention is published. It is a valuable record. Nothing is omitted, and any member of the association may turn to its well-printed pages and readily ascertain exactly what part, if any, he took in the meeting, and certainly what his neighbor said and did. Frank P. Foster, of Corning, N. Y., the secretary, deserves a good deal of credit for the work he performed in compiling the volume, for it shows much painstaking care.

Mr. Kempster B. Miller, who was retained as the electrical engineer by the New York Board of Fire Underwriters to investigate the New York fire-alarm system and report upon it, in his report dwelt at length regarding the dangerous condition of the fire-alarm system in the Borough of Manhattan, New York city. The work required some months and was done most thoroughly, and the conclusions were entirely approved by Mr. John J. Carty, who was acting as consulting engineer. In brief, the report stated that the Manhattan fire-alarm system was in a very dangerous condition and that there was the greatest need for an entirely new system, which would cost about \$1,625,000.

The eleventh annual convention of the International Association of Municipal Electricians will be held at New Haven, Conn., August 15, 16 and 17. At this meeting, as already announced, the following papers will be presented and discussed: "History of the Fire Alarm and Police Telegraph," "Details of Certain Auxiliaries to Fire Alarm Apparatus," "Advisability of Protecting Municipal Electricians by the Civil Service Laws," "Comparison of Underground and Overhead Wiring, and of the Relative Value of Single, Rubber-Covered Wire and Lead-Encased Cable for Underground Construction," and "Conditions Surrounding the Inspection of wires in the Southwest."

The Jamestown, N. Y., Repeating Office.

The equipment of the Western Union Telegraph Company repeating station at Jamestown, N. Y., is about finished, and hereafter that city will be known as a repeater office for the New York and Chicago trunk line running on the line of the Erie Railroad. Six new copper wires have been recently constructed between New York and Chicago over this road, all of which are repeated at Jamestown. The office, which is under the management of Mr. C. A. Stone, is fitted with a strictly modern equipment, including six set of duplex repeaters and two set of single repeaters. There is also a 50-strap switchboard and a 400-cell storage battery.

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"Modern Practice of the Electric Telegraph," although not a new publication, nevertheless fully maintains its value as an excellent technical handbook for electricians, for telegraph managers and for operators. The fact that numerous editions of the book have been issued proclaims its intrinsic worth. The author, the late Franklin Leonard Pope, was a former president of the American Institute of Electrical Engineers, a member of the Institution of Electrical Engineers of London, an old-time telegrapher, and a writer of marked ability. The volume embraces 234 pages, has 185 illustrations and is fully indexed. Price, \$1.50, postpaid. Address: J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

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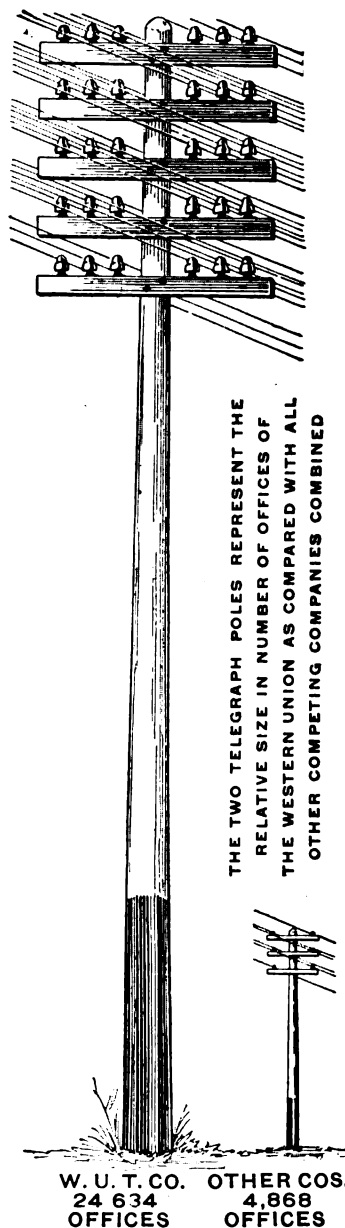
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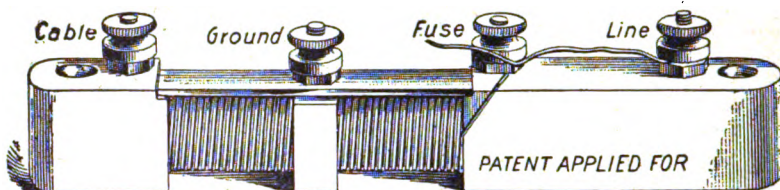
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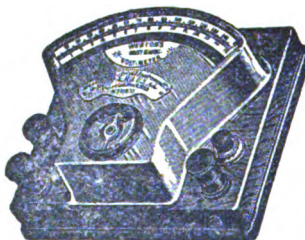
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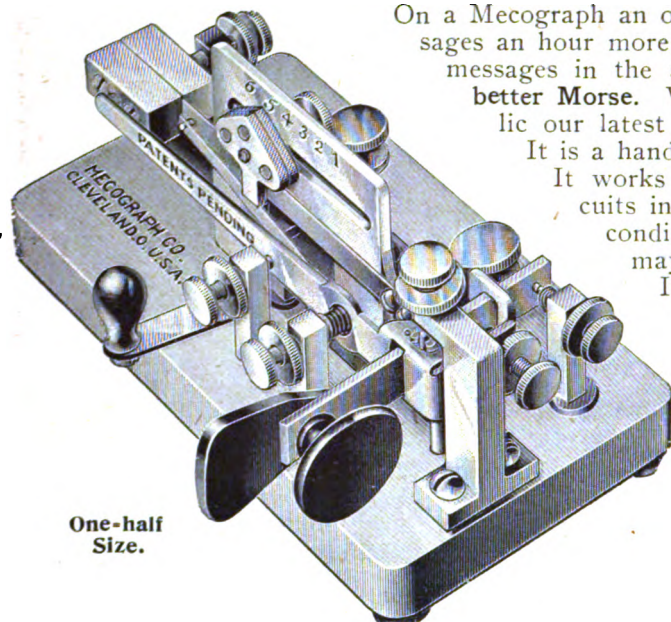


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No. 10.

NEW YORK, MAY 16, 1906.

VOL. XXIV.

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SOME POINTS ON ELECTRICITY.

The Storage Battery.

Part V.

BY WILLIS H. JONES.

Up to this point the subject matter of the storage battery has been confined principally to a description of its inherent qualities and certain information concerning the most approved rates of charging and discharging it for maximum outputs, as well as showing several convenient and economical sources of electrical power for charging purposes. In this concluding chapter we will endeavor to illustrate the principal methods adopted in arranging the connections to meet problems arising from different conditions.

The first thing to do, of course, is to assemble the plates comprising the cell, unless they are already properly connected together. If there are more than two plates, as there usually are in cells of large capacity, there will be one more negative than positive plate; hence if they are arranged in a row, alternately, negative and positive, beginning with a negative plate, the first and last plates respectively will both be negative.

Now connect all the positive plates together and likewise the negatives. The group of lead plates will then comprise the negative electrode and the other set the positive, each combination of plates becoming the equivalent of one large plate pos-

sessing the same amount of superficial area as is contained in all the small plates so connected. The number of plates thus combined within an individual cell has no appreciable bearing on the value of the electromotive force of the cell, except inasmuch that the output of the cell in the form of current will be much greater owing to the decreased internal resistance of the battery thereby resulting from increased plate surface. The electrical pressure of storage battery cells of all sizes is practically the same, two volts. All that then remains to be done is to fill the jar with fluid consisting of three parts water to one part acid, and it is ready to receive the charging currents.

When a storage battery is to be installed to

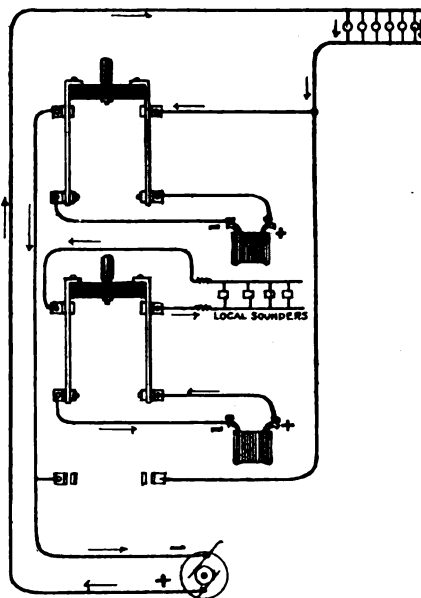


FIGURE 1.

furnish current for local circuits containing 4-ohm sounders only, one cell is all that will be required, provided that it is arranged so as to discharge and recharge simultaneously at approximately equal rates after being placed in active service. If the electric light lamp circuits utilized for charging purposes are only required for illumination during the night and the sounders are in service during daylight only, as is the case in some hotel and other branch offices, it will then be necessary to have a duplicate cell, which can be charged at night and used during the day.

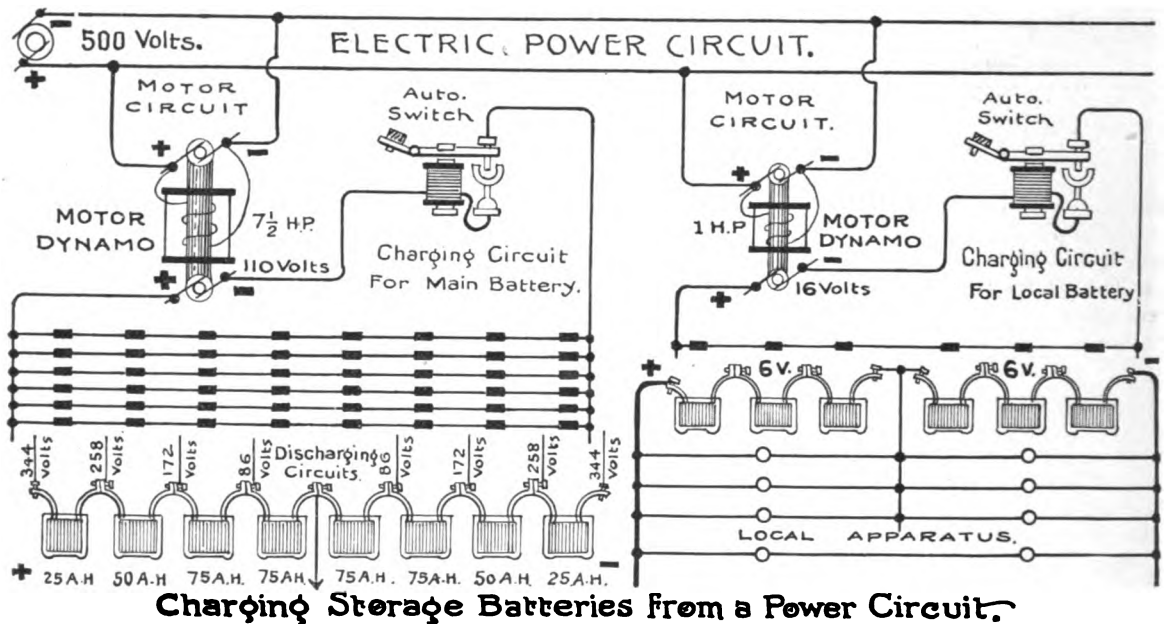
The accompanying diagram, Fig. 1, shows the proper connections for arranging the two cells in

order that one may be quickly substituted for the other in either the charging or the local sounder circuit as desired. Figure 1 represents two double lever or knife-blade switches and connect the two batteries with the electric source and the local circuit. In their present position one storage battery is being charged from the electric light mains, while another is furnishing current for the sounders. By merely reversing the positions of the two levers it will be seen that the bottom battery will then be shifted to the charging circuit, while its companion will begin to deliver current in the local circuit.

The number of lamps to be inserted in the electric light mains depends upon the rate at which the cell must be charged. Each lamp arranged in multiple, as shown in the cut, delivers one-half an ampere of current in the wire leading to the

In this illustration the left hand position shows six separate rows of series-connected cells for main line purposes, being charged in parallel from the 110-volt pressure of the motor dynamo, while the right hand portion shows a similar method of arranging for local battery facilities. In each of the charging circuits is an automatic switch cut-out, consisting of a lever normally dipped into a mercury cup, but which will break the charging current in case the latter should get so strong as to attract the lever armature. This precaution is necessary to prevent the storage battery from discharging through the coils of the 110-volt machine and reversing its duties in case the 500-volt power should accidentally be shut off.

A study of the arrangement and sizes of the cells shown in Fig. 2 should give the reader a



battery, hence the seven lamps shown will charge the cell at the rate of three and one-half amperes per hour. As the electromotive force of the cell is but two volts, the lights will not be perceptibly dimmed by the charging process, and as the lamps are lighted all night anyway, the charging current costs practically nothing.

When a number of cells are charged in series the electric lamps become useless for illuminating purposes on account of the additional back pressure of the row of storage cells. Under these conditions the charge absorbed by the storage battery must be paid for, as it then becomes necessary to light additional lamps for the illumination destroyed by the series charging method. When it so happens that no smaller electrical pressure than 500 volts of a trolley power is available, the method usually employed to meet the case is illustrated in Fig. 2.

A motor dynamo is employed to create the proper electromotive force for charging purposes.

pretty good idea of the general methods adopted when installing storage batteries.

(Concluded.)

With the mind more intent upon showing, in the April 16 issue of this journal, that it is more economical per cell to charge a number of storage batteries in series from a given charging pressure than it is to charge one cell singly from the same source, it was erroneously stated that the total expense for charging the greater number would actually be less. There is a nice point growing out of this statement which may be made the subject of a separate article at another time. In actual practice the wattmeter, as arranged in the circuit, gives the energy due to the full 110-volt pressure instead of that of the 70-volt active electromotive force, which represents the difference between the charging and the counter pressure in the 20-cell battery circuit in question.

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, Inc., June 1 to July 16, Inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, Inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, Inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power From the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16; The Dynamo—Series, Shunt and Compound Wound, Feb. 1-16, March 1; The Storage Battery, March 16-April 1-16-May 1.]

Personal Mention.

Mr. J. B. Yeakle, superintendent of the fire alarm telegraph, Baltimore, Md., a well-known old time telegrapher, and a vice-president of the Old Time Telegraphers' and Historical Association, was a recent New York visitor.

Mr. Charles A. Tinker, formerly general superintendent of the Eastern division, Western Union Telegraph Company, New York, and now retired, after a winter passed at Pasadena, Cal., at the home of his daughter, is back again at his Brooklyn residence, 155 Lefferts place, and is looking the very picture of health.

Mr. H. A. Reed, the veteran manufacturer, has resigned as treasurer of the Bishop Gutta Percha Company, and his oldest son, Mr. W. Boardman Reed, has been elected as his successor, while Mr. D. Reed has become vice-president. Mr. H. A. Reed has been with the enterprise twenty-seven years and is now in his seventy-eighth year, hale and hearty, and will remain president. He is a forty-niner of the telegraph and was an intimate personal friend of Professor Morse.

Mr. Melville E. Stone, general manager of The Associated Press, made the address of the evening before the New York Electrical Society, on April 25. His topic was "News, Newspapers and the Telegraphic Art." He gave a lucid exposition of the development of news gathering and of the extraordinary achievements in this regard which telegraphy now renders possible.

Mrs. E. Howard, the wife of Emmet Howard, of Memphis, former manager of the Western Union Telegraph Company in that city, a lady possessing considerable literary ability, consented lately to take part in an amateur dramatic entertainment at Archer, Fla., where Mr. and Mrs. Howard have been spending a number of weeks this spring, and who, it is said, bore off the honors of the occasion.

Mr. Edward Rosewater, proprietor of the Omaha, Neb., "Bee," an old time telegrapher, one of the delegates to the International Postal Congress, at Rome, Italy, where he dined with the King, April 6, has announced himself as a candidate for the United States Senate.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Col. R. C. Clowry, president and general manager, with the other members of his party, traveling with him abroad, together with Mr. Tom W. Goulding, general superintendent of the company at London, Eng., have reached Paris, one of the objective points of their itinerary, where they will remain several days.

Mr. C. B. Horton, superintendent at Omaha, Neb., has been sojourning at Excelsior Springs, Mo., for the benefit of his health, which has not been good for several months.

Mr. F. J. Scherrer, private secretary to Colonel R. C. Clowry, a few days since accompanied the company's private car "Morse" to the Pullman shops at Pullman, Ill., where it will undergo an overhauling.

A motor-generator system is being installed by this company at Savannah, Ga., displacing a storage battery plant. There are sixteen motor generators used at this point.

The main office of this company at Montgomery, Ala., was damaged by fire on May 3.

Mr. Harry W. Dealy, son of William J. Dealy, superintendent of the commercial news department, was married in Pittsburg, Pa., April 30, to Miss Harriet M. Doughton,

Jay Gould, second son of George J. Gould, vice-president of the company, was defeated at the Queen's Club, London, May 10, by Eustace H. Miles, by three sets to one for the court-tennis championship of the world. Although young Gould is only seventeen years old, Miles had all he could do to beat him.

Mr. P. G. Kern, superintendent of the American District Telegraph Company, Atlanta, Ga., has removed his headquarters from that city to Louisville, Ky., effective May 16.

Mr. A. G. Saylor, chief clerk in the office of General Superintendent Brooks, accompanied by his wife, has returned from a visit to his brother, E. B. Saylor, who is superintendent at Pittsburg, Pa.

Mr. George Roehm, of the general superintendent's office, received his third degree in Masonry, conferred upon him on May 11. A number of his telegraph associates were present at the ceremony.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

Mr. Charles P. Bruch, the assistant general manager of the company, was a Boston visitor last week.

Mr. Perry Chamberlain, city solicitor, has resigned to engage in other business.

Mr. D. C. Donohue, Jr., son of D. C. Donohue, a well-known New York telegrapher, has been appointed stenographer to Mr. John Doran, superintendent of the complaint and claim department.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. E. Waldron, who has been appointed chief operator of the Atlanta, Ga., office, vice W. S. Calhoun, resigned, is a native of Painesville, O., where he was born April 14, 1860. He entered the telegraph service in the old Cotton Exchange in New York, 1880, going to Atlanta in 1888, where he has subsequently served in the various capacities of night traffic chief, repeater chief, day traffic chief, wire chief, and night chief operator.

Mr. F. E. Howell, for eighteen years manager of the Utica, N. Y., office, has resigned to enter the brokerage business. Mr. J. B. Wooster, manager at Auburn, N. Y., succeeds him. Mr. C. M. Ellis has been transferred from Cortlandt to Auburn, to fill the vacancy there, and F. L. Lovell has been appointed manager at Cortlandt.

Mr. Harry H. White, wire chief of the office at Portland, Me., with which he has been connected for twenty-one years, has been appointed manager, vice John R. Kearns, acting manager since December last, who goes to Boston to become the assistant superintendent of the American District Telegraph Company in that city.

Mr. Allan Woodle, who was made acting manager of the office at Boston following the death of Manager W. A. Rudd, has been confirmed as manager.

Mr. E. A. Patterson, manager of the office at Flint, Mich., has been transferred to a similar position at Bay City, Mich., the vacancy thus caused being filled by the appointment of Miss Clara Le Bar, of Lapeer, Mich.

Mr. H. L. Clark, manager at Shelbyville, Ind., has been transferred to the Marietta, Ohio, office in the same capacity.

Mr. George Sallaway, formerly chief operator of the Buffalo, N. Y., office, is now in charge of the repeater department.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Miss M. F. Cowley has been appointed manager of the Augusta, Me., office, vice Ralph W. Morang, transferred to the Lewiston, Me., office.

Mr. Mona S. Harris has resigned as manager at Charleston, S. C., on account of ill health, and Mr. M. J. Hanley, of that office, has been appointed acting manager.

Miss Mary Grubbs has been appointed manager at Hampton, Va., vice Miss Lillian Phillips, who has been transferred to the Philadelphia office.

Recent Telegraph Patents.

A patent, No. 818,802, for telegraphy, has been awarded to Sterns F. Jones, of New York. It relates to that form of telegraphy in which short and rapid alterations of current are divided into groups of varying length under the control of a key or circuit changer. The patentee aims to

strengthen the transmitted impulses and strengthen the received impulses without changing the electromotive force or the strength of current of the alternating-current generator. For this purpose special local circuits are arranged, including transformers and condensers.

A patent, No. 818,477, for a printing telegraph, has been issued to Robert J. Sheehy, of New York. In a printing telegraph there are the combination of the type wheel and shaft, a main line battery and a circuit interrupter included in the main line, and actuated by the shift to change the condition of the line circuit at each step or movement of the type wheel. There is also a main line relay, two local circuits controlled at the front and back stops of its armature lever, a local battery for the circuits, a double wound print magnet having a coil in each local circuit, a magnet in each local circuit for effecting a movement of the type wheel each time the condition of the circuit of the line is changed.

A patent, No. 818,145, for a telegraph system, has been obtained by Myron J. Carpenter, of La Grange, Ill. The system includes a telegraph key, a telephone transmitter, a support common to both adapted and arranged to communicate mechanically, vibrations due to the manipulation of the telegraph key to the telephone transmitter, a source of electric current, and a circuit including the source of current, the key, and the transmitter in series, whereby the transmitter is responsive to the sound vibrations and to the current variations produced by the manipulation of the key.

A patent, No. 817,827, for a system of charging storage batteries, has been granted to Asbury G. Wilson, of Wilkesburg, Pa., assignor to the Union Switch and Signal Company, Swissvale, Pa. A railway signaling system having a primary source of alternating-current supply is provided with means for changing the alternating current into unidirectional current. Storage batteries are charged by the unidirectional current, and feed wires extend from the storage batteries to the signaling system.

The following patent has expired:
No. 401,334, telegraphy. P. B. Delany, New York.

Obituary.

Frank B. Johnson, aged thirty-two years, telegraph operator, formerly employed in the New York office of The Publishers' Press, and more recently with the Nolan Commission Company of Newark, N. J., died May 6 in Brooklyn of pneumonia. He was with the United States Signal Corps under Gen. Shafter at Santiago during the Spanish-American War. The interment was at Lafayette, Ind.

Charles Williams, formerly Postal Telegraph-Cable operator, died at Buchanan, Mich., May 3, aged thirty-seven years.

The Commercial Telegraphers Convention at Cincinnati.

The convention of the Commercial Telegraphers' Union of America met at the Burnet House, Cincinnati, on Monday, May 7, about one hundred delegates being present, many of whom were accompanied by their wives. Mayor Dempsey made an address of welcome, which was supplemented by one of like tenor by President William C. Dudley of the local union. Mr. S. J. Small, president of the Union, responded. The afternoon was devoted to a trolley ride to the Zoo, where luncheon was served. At the evening session reports of the various officers were read, which showed the organization to be in a flourishing condition.

At the Tuesday, May 8, session, a matter was proposed that is the first step toward the carrying out of a tremendous enterprise, but intended to be for the benefit of all classes of union labor in this country. The plan is a comprehensive one, and involves millions of money in the end, that will be used for the support, not only of widows and orphans of union men, but also for their aid in strikes or when out of work because of disabilities.

The scheme was evolved by Daniel L. Russell, of New York. Mr. Russell submitted his plan to President Gompers, of the Federation of Labor, and the latter thought so well of it that he asked Mr. Russell to present the matter to the Commercial Telegraphers' Union at its session in Cincinnati, and request them to take the first step toward carrying it into effect.

Basing his idea upon the fact that the recent exposures of insurance frauds had shown that capital of the great insurance companies is sometimes furnished to large concerns that employ workingmen to tide them over difficulties when there has been a strike, thus aiding the employers against unions; that there is little for the workingman in one of the large insurance companies, because they necessarily hold small policies and cannot get the benefits that the large policyholders do; that from the workingmen comes, in the first instance, the money with which the large policyholders pay their huge premiums, and that because of these things it has become necessary for labor to fortify itself against capital, he evolved the plan of an insurance company to be conducted by the unions of all classes of labor.

His idea is that it is necessary for the unions to educate their members into the business gradually. To do this each branch of labor must form an insurance adjunct to its union. After they have all got to running nicely the funds of all are to be merged into one gigantic corporation, the combined funds to be invested in such manner as to bring an increase sufficient to carry out the objects intended. These are, that there shall be provided from the income a fund for sick benefits, one for death benefits, one for men out

of work, and, the chief one, to assist men when on strike. As the idea has been worked out, theoretically, it is the intention to have the last-mentioned fund so large that when there is a strike, there shall be paid to the strikers a certain proportion of the wages they received while at work, say one half, and thus assist the men to carry out their fight, without entailing hardships on them and their families. It is not the intention, however, to make the pay to the strikers of such an amount as to make it an inducement. The further purpose is to make the combined insurance company of the workingmen of such proportions that there will be no question but that it can carry out the ideas intended, and thus be able to strike a blow at capital when necessary that will be felt, and, at the same time, have a weapon that capital will be apt to respect and think about before it refuses to at least hear and consider the demands that may be made by union men when these demands are reasonable.

Another matter of interest to the members all over the country was the suggestion that a Home should be established for disabled union telegraphers, probably at Colorado Springs. No definite action was taken, however. The remainder of the morning session was taken up with reports of committees. In the afternoon a trolley ride was taken to Ft. Thomas and a lunch at the Wiedemann Brewery.

The evening session was devoted to the discussion of telegraph schools.

Rates of insurance in connection with the plan advocated by Mr. Russell, were adopted at Wednesday's meeting, as follows: For a \$300 policy, twenty cents a month; for a \$500 policy, forty cents a month, and for a \$1,000 policy, eighty cents a month.

At the session held on Thursday, May 10, Milwaukee was selected as the next place of meeting. The question of insurance again came up. The details of putting the plan into execution were left with the officers of the national organization. They are to correct any technical matters to suit the laws of the state in which the headquarters of the insurance branch are located.

In the evening an excursion on the river was had. On Friday, May 11, the ladies were entertained by William J. O'Dell, who conducted them on an automobile ride, afterwards tendering them a reception at his residence. Considerable time was given up to the discussion and adoption of amendments to the constitution at both Thursday's and Friday's meeting.

A banquet was given at the Burnet House in honor of the delegates on the evening of Friday, May 11. The delegates present were: S. J. Small, Wesley Russell, Will C. Long, J. R. Sullivan, S. S. Ulerich, C. T. Lincoln, Chicago; E. B. Duffy, W. J. Cary, Milwaukee; L. W. Quick, A. L. Boyer, H. W. Lynch, O. F. Hocker, St. Louis; M. J. Reidy, Boston; R. S. Chilcott, Cleveland; S. J. Konen-

kamp, E. W. Rattigan, Pittsburg; M. C. Gough, Minneapolis; W. D. Crenshaw, C. H. McElreath, R. J. Fowler, Memphis; O. H. Sherlit, Detroit; Percy Thomas, D. L. Russell, J. M. Sullivan, New York; Cornelius Murphy, H. J. Horn, J. M. Scott, A. E. Rose, Cincinnati; C. E. Hill, Toronto; J. M. Carter, Louisville; W. F. Wright, Philadelphia; G. H. Imbrie, Kansas City; W. W. Beatty, W. M. Patton, Washington, D. C.; B. F. Shrimpton, Birmingham, Ala.; D. B. Jones, M. A. Marcy, Dallas, Texas; C. E. Johnson, R. C. Servat, G. N. Arnold, New Orleans; A. R. Lucas, Augusta, Ga.; J. F. Read, Richmond, Va.; J. W. Haygood, Montgomery, Ala.; E. J. McCarthy, Albany, N. Y.; F. M. Jones, Seattle, Wash.; M. R. Caffrey, Syracuse, N. Y.; H. P. Phillips, M. E. McKittrick, Orville A. Glenn, Winnipeg; R. E. Satterwhite, E. B. Gill, T. A. Pinson, E. B. Whittlesey, Atlanta, Ga.; G. A. McBain, Toronto; A. Watson, Columbia, S. C.

The election of officers occurred on Saturday, May 12, with the following result: S. J. Small was re-elected president over Daniel L. Russell, by eleven votes; W. W. Beatty, Washington, D. C., first vice-president; O. A. Glenn, Winnipeg, Man., second vice-president; H. J. Horn, Cincinnati, Ohio, third vice-president; Wesley Russell, Chicago, secretary and treasury; W. C. Long, editor and manager of the Telegraph Journal; executive committee, M. J. Reidy, Boston; R. J. Fowler, Memphis; S. J. Konenkamp, Pittsburg; J. M. Sullivan, New York; C. E. Hill, Toronto.

Daniel L. Russell was selected as delegate to the American Federation of Labor meeting at Washington, D. C., in November, and to all similar meetings for the next two years. The insurance feature was finally adopted, as were several amendments to the constitution.

The convention adjourned to meet in Milwaukee two years hence, on the second Sunday in June.

The Railroad.

Mr. C. L. Lathrop has been appointed superintendent of telegraph and signals of the Pittsburg, Shawmut and Northern Railroad Company, with headquarters at Angelica, N. Y.

The convention of Railway Telegraph Superintendents, which meets at Denver, Col., on Wednesday and Thursday, June 20 and 21, will mark the "silver" anniversary of this association, for the assemblage will be the twenty-fifth in the series. Headquarters will be established at the Adams House, that city, and that excellent hostelry, one of the best appointed hotels in the West, will extend a grateful hospitality during the three days of the convention, to delegates and all who attend in whatever capacity. Suitable room will be provided for the display of exhibits. The rates at the Adams House, which is con-

ducted on the American plan, are \$3 per day; room with bath, \$3.50; two persons in one room, with bath, \$6.50. Reservations for hotel accommodations should be made direct with the manager. Aside from the business programme, which will include the reading of a number of important papers, the entertainment committee, consisting of Messrs. C. A. Parker, E. E. McClintock, J. M. Walker and J. Munday, have planned a scheme of social entertainment to cover the hours of leisure. On Wednesday afternoon, June 20, the ladies of the party will be afforded a view of Denver by means of a trolley ride. On Thursday, June 21, the Georgetown Loop trip is planned for the ladies, leaving Denver about 8 a. m., and returning about 3.30 p. m., and the "Seeing Denver" car ride for the members of the association in the afternoon, if business will permit. An informal dance will be given in the evening by the management of the Adams Hotel. On Friday, June 22, it is hoped that all will visit the famous gold mining camp of Cripple Creek, leaving Denver about 8 a. m., and returning about 9 p. m. It is also hoped that all will remain and take the trip on Saturday, June 23, over the "Moffat Road," leaving Denver at 8 a. m., and returning at 5.30 p. m. This road, in crossing the Continental Divide, climbs to an altitude of 11,660 feet above sea-level, or about 700 feet above timber line. The snow at this elevation never entirely disappears, and at the time of the convention, in June, the summit will doubtless be clothed with several feet of same. The Denver and Rio Grande, Colorado and Southern, Denver, Northwestern and Pacific, Crystal River and Colorado and Wyoming railway companies tender free transportation to all members and families to any and all points on their lines, and it is hoped that many will visit the various resorts, and remain as long as possible.

Intending visitors will provide themselves with railway transportation through the usual channels.

The Pullman Company will provide half-rate orders for both going and returning trips under the following regulations: Members will make application to the secretary, P. W. Drew, of the Wisconsin Central Railway, Milwaukee, Wis., advising space required and between what points to be used. The secretary will approve same and send to Mr. W. I. Middler, general ticket agent, who will issue the orders and mail same direct to members. All requests should be made to the secretary prior to June 15.

Recent New York Visitors.

Mr. C. K. Hage, division operator of the Pennsylvania Railroad, Williamsport, Pa.

To Fix Canadian Line by use of Telegraph.

The click of a telegraph key will establish the boundary between the United States and Canada. The treaty just ratified by the Senate directs that the boundary shall be defined by telegraph.

This means that the method adopted by United States astronomers in recording the instant at which fixed stars cross the meridian shall be used. The method is recognized the world over as the most exact. The United States and Great Britain will each designate a Commissioner, who, with assistants, will definitely establish the location of the 141st meridian of west longitude. This done the rest will be a mere matter of surveying and establishing objects to mark the dividing line.

The commissioner for this country will be O. H. Tittman, superintendent of the Coast and Geodetic Survey. As a difference in longitude is a difference in time the commissioners will compute the difference between two points and Greenwich.

Mr. Tittman has already computed the longitude of Sitka as compared with that of Seattle; that of Valdez with that of Sitka, and that of Fort Egbert with that of Valdez.

Canadian observers have fixed the longitude of corresponding points and are gradually approaching the approximate location of the boundary. The dividing line is located on the 141st meridian by the treaty made by Russia with Great Britain in 1825. Fort Egbert is within twelve miles of the estimated location of the boundary. It will be one of the stations used in the final observations.

The other stations will be established at points as near as possible to the boundary. Scientists of both governments will be at each station when the computation is made. The stations will be connected by telegraph. Each party will have what is known as a transit. A small telescope equipped for recording the exact instant at which a star crosses its face will be used. Twenty stars will have been agreed upon as those to be observed. At each station the scientists, aided by the transit, will record with chronometers the time down to the fraction of a second that each star passes the meridian.

The telegraph will be used to communicate at each observation the time registered by the chronometer so that there shall be no error due to difference in the instruments. These observations will be repeated in exactly the same way for six nights. Then the observers can compute the exact time of the one station with respect to the other. This is the time required for the star's rays after passing the eastern station to reach the other.

The scientists know by computations the time at which any one of the stars crosses the 141st meridian. They then must compute the time ascertained for the station nearest the boundary with that of the meridian. The difference they reduce to distance, and by measurement they

then fix a point on the meridian which is the boundary.

Deep Sea Research.

A very interesting paper by Dr. James M. Flint has recently been published as Bulletin No. 55 of the United States National Museum, which deals with the large number of 2,074 soundings taken in the Pacific Ocean for the survey of the route for the telegraph cables between the Sandwich Islands and the Philippines and Japan by the way of Midway Island and Guam, the line between San Francisco and Honolulu having been sounded with satisfactory results previously. In the earlier part of 1899, the United States steamer *Nero*, a steam collier of about 5,000 tons, was fitted out for the work and sailed from San Francisco under command of the veteran Captain Belknap, who so far back as 1874 had already greatly distinguished himself in this work. Unfortunately on the ship reaching Manila, Captain Belknap was seized with illness and had to resign his command to Lieut.-Commander H. M. Hodges.

The total length of the line surveyed was 6,000 miles, and the soundings were zigzagged over a belt fourteen miles wide, while complete surface and bottom temperatures were also taken. One of the most interesting results obtained was the discovery of a submerged range of mountains about half way between the Marianne or Ladrone Islands and Midway Island, which rise from a fairly level plain 3,000 fathoms below the surface to within 700 fathoms in places, and extend over some 200 miles of longitude. To the eastward of Guam very irregular bottom was found, the depths varying from 5,000 and upwards to 700 fathoms. An abyss, subsequently called "*Nero Deep*," was struck about 75 miles E. S. E. of Guam, in which soundings of 5,070, 5,101, 5,160 and 5,269 fathoms were taken. The last-named is claimed as the greatest depth ever discovered. Its exact position is given as lat. 12° 43' 3" N., long. 145° 49' E. Between the Marianne or Ladrone Islands and Japan, a continuous line of mountains was found connecting these islands with the Bonin group.

The Commercial Pacific Cable Company, who own the important cables subsequently laid over this well explored ground, are to be congratulated on the valuable help given them by the United States Government, and on the fact that it was entrusted to the skilled hands of Captain Belknap. It is difficult to overestimate the importance of placing at the head of such investigations an officer of special merit, whose knowledge of the work makes its execution a matter of absorbing interest, instead of a dull monotonous performance as it is too likely to be in the hands of the ordinary sailor, with, it is needless to say, a loss of efficiency.

TELEGRAPH AGE has helped many a telegrapher in his career. It will help you. Price, \$1.50 a year. Send for a free sample copy.

Marconi on Transmitting Wireless Messages.

William Marconi recently presented a paper before the Royal Society, of London, dealing with methods of transmitting wireless telegraph messages in certain desired directions and also describing receiving apparatus for taking up the waves emanating from a given direction. The information which he presented related to the use of a straight horizontal conductor placed a short distance above the earth, instead of the usual vertical one. When an insulated horizontal wire is connected at one end to a sphere of a spark gap, the other sphere of which is earthed, and sparks are caused to pass between the spheres, it will be noticed on investigating the space around such an oscillator that the radiations emitted reach a maximum in the vertical plane of the horizontal wire, and proceed principally from the end which is connected to the spark gap, while the radiation is nil, or reaches a minimum, in directions which are approximately 100 degrees from the direction in which the maximum effect occurs. He had also noticed that any horizontal conductor of sufficient length, placed upon or at a short distance above the surface of the ground, and connected at one end through a suitable detector to earth, would receive with maximum efficiency only when the transmitter was situated in the vertical plane of the horizontal receiving conductors, and in such a direction that the end connected to the detector and to the ground was pointed toward the transmitting station. If, therefore, such a horizontal conductor was swiveled about its earthed end in a horizontal plane the bearing or direction of any transmitting station within range of the receiver would be ascertained. In his experiments Mr. Marconi had noticed that the most advantageous length of the receiving horizontal wires, in order to obtain results at maximum distances, was about one-fifth of the length of the transmitted wave, if the wires were placed at a distance above the ground; but the receiving wires should be shorter if placed on the ground. He thought it would be instructive to investigate more thoroughly the difference of the results and curves obtained by means of horizontal wires placed at different heights above the ground, and also the effect of varying the length of such wires. When using horizontal receiving wires, arranged as described, he had often noticed that the natural electrical perturbations of the atmosphere or stray electric waves, which were generally prevalent during the summer, appeared to proceed from certain definite directions, which varied from time to time. It would be exceedingly interesting, he thought, to investigate whether there existed any relation between the direction of origin of these waves and the known bearing or direction of distant terrestrial or celestial storms from whence these stray electric waves most probably originated. The experiments described were carried out during a period of many months. The tests over short distances

were conducted over practically flat country, while those over considerable distances took place over hilly country, and in some cases partly across sea and partly across land.

Wireless Telegraphy on Seagoing Steamships.

BY DR. ALFRED GRADENWITZ.

The use of wireless telegraphy for the mutual communication of seagoing steamers and correspondence between the latter and the land has been making rapid advances of late. The first practical utilization of wave telegraphy on German coasts was made by the North German Lloyd, which, in May, 1900, established the first German wireless-telegraph station on the Borkum Island and another at Bremerhaven, while equipping its rapid steamers with wireless apparatus. The German Navy followed this example, and the Hamburg-American line, as well as all the leading steamship companies of other countries, adopted this system of telegraphy for their large steamers; about fifty steamships of the mercantile navy of different nations being at present provided with wireless outfits. At the same time numerous stations for wireless telegraphy were erected at the most important coasts throughout the world, especially on the Northern Atlantic, either by the respective governments or by private companies.

With the increasing number of these installations, their advantages became more numerous, owing to the growing possibilities afforded for such ships as were provided with wireless telegraph apparatus to communicate with either a land station or a passing steamer. It may be said that the rapid steamers sailing for New York from Bremen or Hamburg are at present, generally speaking, every day in telegraphic communication with some land station or another steamer. While being seldom without communication in the North Sea and the Channel, steamers are frequently in a position to exchange telegrams on the Atlantic Ocean.

This adoption of wireless telegraphy in steamship service will be in constantly increasing degree, a benefit to passengers, especially business men, while having an extraordinary bearing on the safety of steamship service as well as on the correspondence between the steamers and the company or their agencies. In fact, a steamer supplied with wireless telegraph apparatus will be able several hours before coming to anchor in the harbor to indicate the actual time of its arrival, the number of passengers, etc., so that any arrangements can be made before its arrival for dealing with the passengers and baggage, and providing for special traveling facilities. Information on the atmospheric conditions, fog, storm, ice, etc., can be transmitted from land stations or passing ships. Some steamers, it will be remembered, have been recently printing a special newspaper, daily recording on the high sea any information transmitted by wireless telegraphy.

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NEW YORK, MAY 16, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientage. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The recent arrest in Philadelphia of wire tappers make it appear that the bucketshop people, driven to an extremity in their desire to obtain quotations, were willing to secure the same from exceedingly shady sources. Certain it is the wire tappers in this instance were engaged in a new dodge, for in tapping genuine wires over which stock, grain and other quotations are transmitted, they sold the information thus obtained to the bucket shops, even those located as far away as Cincinnati and other Western cities. It is possible that the action of the New York Stock Exchange in its endeavor to prevent bucketshops from receiving quotations is responsible in great measure for this new feature in wire tapping.

Subscriptions in behalf of those members of the fraternity who suffered in the San Francisco dis-

aster, made in numerous telegraph offices throughout the country, have reached large aggregate proportions, and ought to afford a distinct and generous measure of relief for the purpose intended. Each office, however, has acted independently in the matter and the distribution of the different sums so raised has been conducted in accordance with the wishes of the contributors. As the movement, most commendable in purpose, is wholly local in character, lacking in co-operative telegraphic direction, it is proper to state that TELEGRAPH AGE will be unable to acknowledge the receipt in separate detail of the various sums that have been raised as sufficient space for the purposes is unavailable.

The San Francisco disaster was not lacking in elements enabling the swindler to get in his fine work. This time the collection of money was successfully made in New York and elsewhere, ostensibly for the benefit of telegraph operators in the stricken city who, it was represented, had lost their homes. It was an easy game to work upon aroused human sympathies at such a time, and when a New York banker was called up by telephone, presumably by the manager of a telegraph company, and asked for a contribution for so worthy a cause, what was more natural than to pay the amount shortly afterwards to the uniformed messenger who called to collect the same. This was the plan worked by a couple of confidence men whose detection, arrest and punishment subsequently followed.

The point raised by Mr. Gardner Irving in his speech on the occasion of his retirement from the presidency of the New York Telegraphers' Aid Society, to the effect that a man who is still young, and who is confined in an insane asylum, was receiving a regular stipend from the society, and that as he was strong and robust these payments seemed likely to be continued for many years, has been the means of bringing this phase of the aid question forcibly before the members of this and other societies of a like class. The injustice of continuing such payments indefinitely under the conditions cited, is clear.

It appears that cases of this character are by no means rare, for it is said that the New York Telegraphers' Aid Society had no less than seven such cases to deal with at one time last summer. It is evident, therefore, that specific measures calculated to adjust properly such conditions are needed.

The folly, not to say wrong and injustice, of arbitrarily removing and retiring on pension employees in the public service who are still capable of rendering efficient labor, to make way for political or other favorites, is abundantly illustrated in the cases of

James Keenan and Thomas Williams, whose reinstatement as members of the staff of the police telegraph in Brooklyn, in answer to their demand by suit, was recently ordered by the court. The story that these men were deposed because they had deteriorated in capacity, were classed as "has beens," was refuted in the court's decision. Such a judgment and others of like character rendered elsewhere, should be accepted as a severe rebuke to a system which traces its origin to political servitude, and which is becoming altogether too common in every part of the country, and whose pernicious influence is exercising a tendency to lower the standard of the public service.

The complaint is abroad in the land of the existence of a famine in messenger boys. Here certainly is a condition of things. Whether there is an actual scarcity of boys considered as a distinctive product, or whether the thinning of the ranks is due, as has been hinted, to the existence of spring fever, an indefinite form of disease, which so often exercises a mystic influence on the minds and actions not alone of boys, but frequently also of men, may be a debatable question. Yet it would appear that the boy per se is in evidence on every hand, although it must be admitted that the messenger service for some occult cause, feels a crippling influence in these lengthening spring days. Whatever may be the reason it is clear that the supply of boys has fallen below the normal. It may be that with the coming of summer and a consequent closing of the schools the number of boys thus liberated, who wish to take advantage of vacation time to add to their fund of pocket money, may be augmented, and thus lead to a refilling of the depleted messenger ranks. Possibly when the visible yield of boys becomes greater the demand for their services will be lessened.

The House and the Military Telegraphers.

It is to be deplored that the passage of the bill whose purport it is to afford relief to needy members of the Society of United States Military Telegraph Corps should hang fire in the House. The bill is numbered 3,178, and has been in the keeping of the Committee on Invalid Pensions for a long time. A similar bill was passed unanimously by the Senate on February 8, more than three months ago, and it was confidently expected at the time that favorable action in the matter by the House would also speedily follow. The bill is based upon equity and righteousness. Its passage would be but a recognition of value received, for the army record of the men whom the measure is designed to serve was fully on a par with that of the brave men with whom they acted in close conjunction and whose service as soldiers in the ranks the country has so generously recognized. The Civil War closed forty years ago, and the

military telegraphers, never, comparatively speaking, a large body of men, are becoming well advanced in years, are dwindling in numbers, and if ever recognition and aid is to be accorded them, justice demands that it should not longer be deferred.

When the bill is reported by the Committee, as it is hoped it soon will be, Congressmen should be prepared to rally to its support and promptly record their vote favoring the relief sought. In the meantime we advise all who are interested in this matter to write to their respective Congressmen and urge upon them the necessity of speedy action being taken in the premises. The present session should not close without the passage of this meritorious bill.

Mr. Maynard and the Telegraphic Historical Society of North America.

It has been a source of profound regret to many that the Telegraphic Historical Society of North America did not maintain a longer career as an independent association. Organized at Washington, D. C., many years ago, under the direction of George C. Maynard, it served a most useful purpose in the annals of telegraphy and in the preservation of telegraphic relics. For a number of years Mr. Maynard acted as the secretary of the society, until, in fact, about a year prior to its consolidation, in 1901, with the Old Time Telegraphers' Association, in connection with which its name is preserved, but with identity and usefulness hopelessly gone. Mr. Maynard is one of the most competent living historians of the telegraph, and the future history of that service has suffered a distinct loss because of his retirement and dissociation therewith. He is the assistant curator of technology of the Smithsonian Institution, a man of scholarly attainments, a forty-niner of the telegraph, and consequently unusually well equipped for the secretarial duties he once performed. The society was never adequately supported; its maintenance apparently awakened no enthusiasm, and possibly under such circumstances its passing was inevitable, for no one man could properly be expected to give time, thought and labor, even in so worthy a cause, without the encouragement due to sentiment at least, of those in whose service he really was unremitting in effort.

One cannot look over the records of the Telegraphic Historical Society of North America, as maintained by Mr. Maynard, without being impressed with the careful methods and business-like management followed by its painstaking secretary. If he had been supported properly in his laudable undertaking and his services consequently prolonged, he would have furnished for future generations valuable historical data which are now perhaps forever lost. Mr. Maynard, in addition to enthusiasm and love displayed for his work, possessed a trained mind, and this enabled him to

cull out and preserve from the vast amount of material which came under his observation only that which was likely to prove valuable.

The Making of a Telegraph Newspaper.

While the possibility of error is ever present in the making of a newspaper, because the element of haste in thought and action cannot be eliminated therefrom, nevertheless the importance of an absolutely correct published statement cannot be overestimated. The reader of a trade paper, of a journal such as TELEGRAPH AGE, is inclined to accept, and very properly so, what appears in its printed pages, especially that which is of a technical character, to be free from misstatement. If instead error is sometimes detected, even though the same may be due to carelessness in expression, or perhaps to typographical blunder, the latter one of the most difficult of faults to overcome, reliance in the offending sheet is to a certain extent apt to become impaired. If on the other hand accurate expression dominates the paper, the fact bespeaks confidence in its utterances. Hence it is that in order to guard effectually against mistakes unceasing vigilance on the part of the editorial department is of the utmost importance. A close scrutiny of all that is published must be carefully observed. Verification of statement becomes constantly necessary, frequently even in the contributions submitted by trained writers, those who are presumed to be familiar with the subject with which they are dealing; for errors, more often perhaps due to carelessness, possibly laziness in neglecting properly to consult authorities, lurk where least expected. The Editor must scan, and, if need be, edit, not only every accepted article or reprint matter, in advance of use, but later in the galley and page proofs, and in the final make-up must he be also keenly alert to see that all indicated corrections have been made by the printer.

It has been a matter of conscientious pride with the editorial staff of TELEGRAPH AGE to keep the paper free from erroneous statements. Apparently our efforts in this direction have been appreciated on the part of our readers, for we frequently are in receipt of communications congratulating the paper because of immunity in this respect. The inexorable rule, long since adopted, is to investigate every statement about which any doubt exists, before it is printed. In other words: "Be sure you are right and then go ahead."

We have no patience with that type of journalism that accepts or hurriedly puts together "stuff" without strict regard to its correctness. Such slovenly work, to use no harsher term, should be sternly rebuked and should find no recognition in any self-respecting newspaper office. To print an acknowledgment of error growing out of careless writing, is a tacit admission of incompetency that should prompt truthful and painstaking original utterance.

Of course the production of a newspaper is a human undertaking, and it is written that "to err is human," especially, it may be said, when the poor printer is a factor in the transaction; therefore it may be that in spite of the exercise of all due diligence, errors may occasionally creep into these columns, but we think it will be found in every instance that they are of a minor character, of a typographical nature, certainly not those due to careless or slipshod methods.

Mr. Coffin and the Telegraph.

In his generally admirable address made before the Magnetic Club the other evening, on the occasion of their dinner, at which he was a guest, Mr. Charles A. Coffin, president of the General Electric Company, said that while in Egypt he was enabled to cable his company in New York at a cost of but \$1.75 per message. On the other hand, and by way of contrast, he complained that it cost him over \$3 to send a wireless message from his steamer when off Nantucket to his family in New York, conveying the brief information that he would arrive at a certain time. Of course, in order to secure the low cable rate named cipher code was made use of and the number of words employed were reduced to a minimum. Mr. Coffin's statement was a specious one, the weight of which apparently was not lost on some of his hearers, those unacquainted with the true facts in the case.

The unavoidable inference drawn from the speaker's remarks, the occasion being a gathering mainly of telegraphers, was that the large cost of the wireless message was due, perhaps, because of the high tolls exacted by the American telegraph companies for the performance of their part in the transmission. As a matter of fact, this interpretation of the circumstance is an error. It is the Marconi Wireless Telegraph Company, an English concern, that exacts these high tolls, and not the American companies, for the land line which transmitted Mr. Coffin's message really received but seventy-five cents for its share of the transaction in forwarding the message to its destination, a sum to be divided between two companies.

No unfair criticism, however, should be directed against the wireless company, for it must be understood that wireless telegraph equipments are costly, and are maintained on steamers only at a large cash outlay. The installation of apparatus on a first-class liner costs about \$25,000. The tariffs demanded are therefore necessarily high, but it is doubtful whether they are exorbitant commensurate with the service rendered. And it is not out of place to remark in this connection that the income of the Marconi company derived from this source is not yet sufficiently liberal in amount as to indicate generous dividends for the shareholders, hence a reduction in the tariff would hardly improve matters, and cannot be expected at the present time.

The land telegraphs, however, should not be permitted to rest under any unjust suspicion, and it is hoped that Mr. Coffin will recognize the force of the argument.

Locating Grounds in Cables.

In using the Varley or Murray loop test for locating grounds in cables, writes Gabriele D'Eustachio, in the *Electrical World*, the results are not satisfactory, due to faulty resistances in the conductors and to the difficulty of making perfect connections for the test. In lead-covered cable a ground or grounds between conductor and lead or conductors and lead can be located exactly, in the following manner:

Connect the lead sheath to one side through an adjustable resistance (lamps can be used) and the copper to the other side of any direct-current circuit and regulate the resistance so that two or three amperes will flow through the lead, the short-circuit and the grounded conductor. Use a galvanometer with leads having sharp metallic points for contact terminals and place the contacts a few feet apart on the lead sheath.

When there is a deflection on the galvanometer the testing connection is at some point between the connections to source of current and fault. When the fault is passed, there will be no deflection on the galvanometer. This may be done in different manholes until the nearest two points which can be reached, between which the fault is located, are found.

If the fault should be located at a point in a duct between manholes or where the cable cannot be reached, the section between the two manholes or points where the fault has been located must be pulled out and the same galvanometer test made every few feet, as the cable is being placed on reel, until the exact point of the fault is located.

In case of a foreign current flowing in the lead sheath due to defective return conductors of street railway systems, etc., there may always be a deflection on the galvanometer. In such cases the test current may be cut in and out during each test, and if the galvanometer needle swings, the testing connection is at some point between the source of the test current and the fault, if the deflection of the galvanometer is constant, the fault has been passed.

The Gerard method, using an induction coil and a telephone receiver, gives good results when the distance between the surface of the short-circuited conductors is not less than 5-16 of one inch. This method is not very satisfactory in places where the cable is located near an external and variable magnetic field, which will induce currents in the coil connected to the telephone receiver.

The Cornerstone of the United Engineers' Building Laid.

The cornerstone of the United Engineers' Building, at No. 25 West Thirty-ninth street, New York, was laid on the afternoon of May 8, the act being performed by Mrs. Carnegie, the wife of Andrew Carnegie, who donated \$1,500,000 for the erection of the building. Most cornerstones are laid first and the buildings erected afterward. In this case the order was reversed; the sky-scraping home of the electrical and kindred engineers is nearing com-

pletion, and the cornerstone was pushed into a hole reserved for it.

Mr. Carnegie made a speech, in which he expressed the hope that the building would be a great success in bringing together the members of all the branches of engineering. "Union is necessary in science nowadays as in politics," he said.

In the zinc box which was put in the cornerstone was a golden plate inscribed with the iron-master's original letter:

"To the American Society of Mechanical Engineers, the American Institute of Mining Engineers, the American Institute of Electrical Engineers and the Engineers' Club: It will give me great pleasure to devote, say, a million and a half of dollars to erect a union building for you all in New York City. With best wishes, very truly yours,

"ANDREW CARNEGIE."

"March 11, 1904."

The box contained new coins struck May 7 at the Philadelphia Mint, from \$20 down to a cent. Mrs. Carnegie looked at them delightedly and exclaimed: "I hate to shut them up!" Some one answered: "The mining engineers will probably dig them out."

Copies of newspapers and various reports and documents concerning the societies, including Mr. Carnegie's certificate of honorary membership, made a bulky boxful.

Plans of the Wellman Polar Expedition.

Walter Wellman left America to go to Paris on April 24 to prepare for his proposed trip to the North Pole by an airship. Maxwell J. Smith, who will be in charge of the wireless telegraph system of the expedition, sailed on May 5. Major Hersey will represent the United States Weather Bureau and the National Geographical Society, and will act as navigator and observer for the expedition. Dr. W. M. Fowler, of Bluffton, Ind., will accompany the party as physician and surgeon. Felix Riesen-berg, of Chicago, because of his familiarity with navigation and nautical astronomy, has been selected to act as assistant navigator and observer. Francis H. Buzzacott, famous in the Far West as guide, sportsman and camp expert, will accompany the expedition as chief of the commissary department and head sportsman.

Mr. Wellman will spend most of May in Paris, and a series of ascensions will be made in ordinary balloons to familiarize the explorers with the conditions and problems of air navigation. Mr. Wellman expects to reach Tromsø with his entire party early in June. Cable messages from Paris report work on the airship progressing as planned, and Mr. Godard, the builder, expects to have it finished by the end of May. In fact, all of Mr. Wellman's plans are being worked out on schedule time, and he sees only the brightest prospects before him. During his progress toward the North Pole he will send reports daily by wireless telegraphy.—*Western Electrician*.

Legal.

A decision of far-reaching consequence has just been handed down by the eighth circuit of the United States Circuit Court of Appeals bearing upon the rights of bucket shops to the use of stock market quotations. The court holds that a bucket shop has no right to the quotations of the Chicago Board of Trade.

It is the first decision on the bucket shop question in the United States courts. The case was based on the Board of Trade's contention that the Cella Commission Company had no right to its quotations surreptitiously obtained. The bill submitted by the Board of Trade to enjoin the Cella gamblers from using the board's continuous market quotations had been dismissed by the lower court upon the ground that the quotations were the result of gambling transactions upon the floor of the exchange and did not constitute a species of property which appealed to the conscience of a court of equity for protection. The Court of Appeals reversed this decision, thereby establishing an invaluable precedent in the prosecution of bucket shops.

The opinion was delivered by Justice Hook, in the course of which he says: "The proof here is conclusive that the Cella Commission Company was conducting a bucket shop within the accepted meaning of that term."

Justice Hook goes on to say: "In a suit to enjoin a threatened or continued commission of certain acts the amount of value involved is the value of the right which the complainant seeks to protect from invasion, or of the object to be gained by the bill.

"In the case before us the Board of Trade claims a right of property in the market quotations gathered upon the floor of its exchange, and also the right to control their distribution and use. Upon the faith of the validity of these claims it entered into a contract with two telegraph companies for the distribution of the quotations to those approved by it, which yields it an annual revenue of \$30,000. The contract obligates the Board of Trade to use all reasonable endeavors to protect its property right in the quotations against purloiners thereof. The contentions of the defendants and their acts are wholly at variance with the existence of any such right of property or control. They assert somewhat inconsistently that the quotations are the right of gambling transactions, and therefore not the subject of property, and also that they are affected with a public interest and the right to the general use by all desiring them cannot be prohibited or restrained by the Board of Trade.

"It is obvious that if the position of the defendants be sustained the rights of the Board of Trade would either cease to exist or become of merely nominal value. The real value of the property claimed arises from the right of selection and exclusion of those desiring the use thereof and to prescribe terms and conditions; and it is

this property and the accompanying right, which, denied by the defendants but yielding the revenue indicated, are sought to be protected by the bill of complaint. This is a sufficient showing of a jurisdictional amount of value in controversy."

Counsel for the Cella Commission Company contended that when the quotations were taken off the wire and posted on the defendant's blackboard, these quotations had been superseded by later ones and had, therefore, become in a sense surrendered and dedicated to the public so that any one might use them without let or hindrance.

This bit of sophistry was thus disposed of by Justice Hook: "We cannot believe that they (the Cella Commission Company) would entertain wagering contracts upon the basis of a quotation of the market price of a commodity which was known to have been superseded by a later one. To do so would be betting upon the happening of an event that either had already transpired, or was to some extent at least foreshadowed by the later evidence of the trend of the market.

"The right of property in the quotations endured for a sufficient length of time to enable the Board of Trade to avail itself of the benefits thereof; and if those who are in the position of the defendants are permitted to operate so closely in point of time that they have practically the same uses as one who is authorized to receive them the right would be of doubtful value.

"The decree of the circuit court is reversed and the cause is remanded with direction to enter a decree in favor of the complainant."

The decision of the court also stops bucket shops from prosecuting a mandamus proceeding against telegraph companies to compel them to furnish quotations.

A Telegraph Company That Paid a Big Dividend.

The Connecticut Telegraph Company, a small local concern capitalized at \$35,000, has for some years been paying 8 per cent. in dividends, but in April it paid a dividend of 100 per cent., thus returning to its stockholders all the capital put into the company. The circular accompanying the checks says that the business is uncertain and that as this surplus has been accumulated the management thought it would be well to make the shareholders good as to their investment. Future dividends, it is significantly said, will be less regular or certain.

The Connecticut River Telegraph Company was organized in June, 1867, and for a long time operated a telegraph line extending from Hartford to Saybrook, connecting at Hartford with the Western Union lines. In September, 1887, the name was changed to The Connecticut Telegraph Company, and about the same time the franchise was purchased by the Southern New England Telephone Company, who appear to be the present owners, all the officers of the telegraph company being officers of the telephone company, namely: Morris F. Tyler, vice-president; E. N. Clark, treasurer, and V. M. Tyler, assistant secretary.

The San Francisco Telegraph Office in 1880.

BY J. W. HAYES.

[To write respecting the telegraph in San Francisco, even though it be of events long since transpired, and in the reminiscent vein that has characterized my contributions of late, seems almost a travesty at this time, in view of the recent disaster that has so completely overwhelmed that city in which the telegraph suffered equally with all other interests. Yet, true to its traditions, and to its everlasting honor, in which every telegrapher, be he active or retired, feels a thrill of pride, the telegraph refused to acknowledge defeat; and although baffled and driven from its offices continued to maintain communication with the outside world in the midst of difficulties occasioned by calamities calculated to appall the stoutest hearts. But my sketch was prepared before the earthquake shock and the fire wrecked the city at the Golden Gate, and as it fits into the series I am furnishing to TELEGRAPH AGE, it is submitted herewith.]

An itinerant operator, who had traveled far and wide, used to say: "It is harder to get a position in the San Francisco office than it is to enter the kingdom of Heaven." He was not far wrong in expressing this opinion either, for those who had positions there seldom died and never resigned—only increasing business and facilities for handling the same made room for additional operators.

The operating force in the year 1880, as nearly as I remember, was the following: Flemon Drake, day chief operator; his brother, Charles Drake, night chief, and W. J. Hamilton, assistant day chief. The operators were John Leatch, Eugene H. Sherwood, James S. Urquhart, E. Somerville, Charles Pierson, Horace Jones, B. A. Worthington, E. H. Fleming, J. W. Hayes, W. E. Williamson, J. V. O'Brien, George Bowker, George Brown, better known as "Blower" Brown; H. A. Dusouchet, Samuel B. Rankin, W. J. Martin, Edward Folger, the Misses Byrn, the Misses Laura and Florence Coates, Mrs. Dozier, Miss Bell Nicols, Miss Cole, and, biggest of all, John H. Powers.

A spirit of the greatest harmony existed in this office, each individual taking an active but quiet interest in each other's welfare, making, so to speak, a large family of the whole. The late John I. Sabin, who was president of the Pacific States Telephone Company, was proud to be known as having once been an operator in the San Francisco office, and never hesitated to so proclaim himself.

"Time and tide waits for no man," and it is passing strange to note what has become of these friends of twenty-five years ago in that happy circle. John Leatch, who was distinguished for his varied abilities and who was the prince of good fellows, died in Arizona a few years ago. George Bowker, well known in Buf-

falo and the East, and a star operator, also died in Arizona a dozen years ago. "Ed." Fleming, too, passed away about the year 1890, and I just learn that W. J. Hamilton, whom we all called "Bob," died recently in Los Angeles. The rest of the force of those days are scattered to the four winds. Charles Drake is with the Oregon Railroad and Navigation Company in Portland, Ore.; Flemon Drake, his brother, holds a responsible position with the telephone company in his adopted city; B. A. Worthington has acquired a national fame as a railroad manager, and is now first vice-president and general manager of the Wheeling and Lake Erie Railroad, and other of the Gould interests, Pittsburg, Pa. He was always an energetic, level-headed fellow, early indicating his ability to be a leader. H. A. Dusouchet, of New York, is well known as an author and playwright, and has produced a number of standard plays, among them "My Friend from India." Horace Jones, one of the crack operators of his time, is with the Southern Pacific Railroad. Charles Pierson is in Mexico, presumably because of his partiality for warm climates. E. Somerville (we never knew him by any other name than "E") is in business in Los Angeles and doing well. John Powers, whom every one knows from Maine to Mexico, is with a private corporation in Southern California, and his old friends will rejoice to know that he is doing well. I have seen John Powers draw \$20 from the cashier and pass the same all out to ten or more operators "on the block," and then go over to Paupers' Alley and fill up on a free lunch.

James S. Urquhart was once manager of the San Francisco office, leaving the same to accept the position as superintendent of the fire alarm telegraph. He made and lost a fortune in stock speculation, but took his reverses gracefully, and now is filling the position as manager of one of the Postal Telegraph's main branch offices in Portland, Ore. "Ed." Folger is manager for the Western Union Telegraph Company at Oakland, Cal., and is as young, apparently, as he was twenty-five years ago. The Coates sisters and the Byrn sisters are married and have not left me their addresses. W. E. Williamson is an all-around operator, and is swinging around the circle somewhere in the East. I think the only person on the operating force of 1880 in San Francisco that is left to tell the story is Mrs. Charles Dozier. She has raised a family under many difficulties, being left a widow in 1879. Some day, perhaps, she will write the history of the San Francisco office, and it could not be done by more competent hands.

I forgot to mention one of the best known operators in the country who was a member of the force in 1880, and that was William Grier. Who ever worked the overland wires and did not know "Billy" Grier? He was the most finished sender that ever worked a long wire, and he could take more stuff that "didn't come" than

any operator in the business. He is now ranching in Sonora county, Cal., and is deservedly prosperous.

At the time of which I write, James Gamble was general superintendent, Frank Jaynes was assistant general superintendent, and Frank H. Lamb was superintendent. Mr. Gamble died at Santa Barbara, Cal., June 20, 1905. The telegraph of California owes much to the pluck and dominating spirit of Mr. Gamble, who successfully overcame what were considered in those days insurmountable obstacles. Frank Jaynes, as is well known, is now the general superintendent of the Western Union Telegraph Company, at San Francisco, and F. H. Lamb, who was superintendent at Portland, Ore., for a number of years, has been for some years past district superintendent at San Francisco.

In the auditing department, back in 1880, A. P. DuBois was the chief clerk. He was a good man. His death occurred recently. Alexander F. Urquhart was Mr. DuBois's assistant. He quit the business years ago and now holds an important position with Wells Fargo and Company. L. W. Storrer was cashier and John H. Barry, delivery clerk. "Barry, S. F." was once as familiar as "Clark, N. Y." Mr. Barry, too, is numbered with the dead. Mr. Storrer has met with preferment in the telegraph service, and no one needs to be told that he is now the general superintendent of the Postal Telegraph-Cable Company at San Francisco.

One of the unique figures that would come and go frequently in the old days was Thomas Stanley Cunningham. Cunningham was a man of strong personality. Irish by birth, he inherited the impetuosity and rollicking disposition of that race. He was a poet, a writer, a comedian, a soldier, and possessed other commendable qualifications too numerous to mention. He still lives in San Francisco, where he is engaged in local politics.

William J. Martin came to San Francisco from Salinas, Cal., where he had been manager. He worked on the night force, and rapidly became night chief, chief operator, and finally manager. It was during his administration as manager that he attracted the attention of Claus Spreckels, who made him business manager of the San Francisco Call, a position which he has since filled with much credit to himself and corresponding profit to his employers.

J. R. Bailey was manager at San Jose, Cal., and was one of the best fellows in the world. W. H. Wallis was manager at Yreka.

There was but a small force of operators in Los Angeles at that period. R. R. Haines was superintendent. He was a pioneer telegraph builder, who had won his position by hard work and good service. G. Q. Stewart was manager and Richard Decatur, Edward Keubel and George Lewis were some of the operators. Mr. Stewart is with the Pacific States Telephone in San Fran-

cisco, but I have lost the whereabouts of the others.

In Sacramento, John Allen was manager, and he was assisted by his brothers, David and Edward, as operators. William Cohen, one of the flowers of the profession, was press operator.

French West African Telegraphs.

The British Consul-General at Dakar, says the Electrical Review, of London, in a recent report to the foreign office, states that the system of land telegraph lines in French West Africa is very complete, every post of any importance throughout the whole of the vast territories being in telegraphic communication with headquarters and with Europe, and improvements are constantly being made. The West African system is to be connected with that of Algeria across the desert north of Timbuktu, for which purpose a sum of £4,000 has been set aside in 1906. Experiments will at the same time be made with wireless telegraphy in that region. By a recent ordinance the price of telegrams throughout French West Africa has been reduced to ten centimes per word, with a minimum charge of one franc. In February, 1905, the new submarine cable between Brest and Dakar was successfully laid, so that there is now direct cable communication between France and her West African colonies by an all-French route.

With special reference to the Ivory Coast, the consul states that the expenses of the post and telegraph service of that colony will amount to £17,189 for 1904-5, and the receipts are expected to reach £5,200, leaving a deficit of £11,898; thirty-nine post and telegraph offices are in operation throughout the colony, with a staff of one inspector, fifty-four European and native post and telegraph clerks, sixteen postmen, three European and two native chief line superintendents, and eighty-seven linemen.

The large number of electrical and telegraph inventions made by the late Robert J. Sheehy, whose death was announced in our previous issue, illustrates to what an extent the latent genius of the man developed under the stimulus of constant application. Mr. Sheehy, who was without education, began life as a telegraph lineman, yet the inventions he gave to the world, unfortunately without much pecuniary benefit to himself, were many, embracing among others: Automatic signal systems for both steam and electric railways; automatic signal system for third rail electric railways (the only third rail automatic signal system placing signals on the trains); multiple unit control system; power rails automatic sectionalizing system; automatic electric-magnetic graduated brake system; automatic point locking and unlocking system; "station selector" telegraph system, and a typewriting telegraph system.

Dr. L. M. Rheem Indulges in Reminiscence.

(Continued from issue of May 1.)

[Dr. L. M. Rheem, of Minneapolis, Minn., contributes another one of his interesting sketches relating to the telegraph fraternity as it existed at Omaha thirty years ago, and of which he was then a member. The doctor frequently exhibits a keen sense of the humorous in what he relates, a narrative not unmixed with a certain pathos refreshing in its good nature and originality of expression, recalling incidents well calculated to draw a smile from many who were participants in the scenes depicted.]

"In the spring of 1876, Mr. J. J. Dickey, our superintendent, sent me to Denver to take charge of the office there. I think I was relieved at Omaha by Earl Rudd, but am not sure; whoever it was that relieved me was succeeded by Mortimer A. McCoy, who will be remembered by many old Buffalo men. He was a fine operator and a good manager but his health was poor, and after the Centennial Exposition, which I attended, I was recalled to Omaha to relieve him. The Atlantic and Pacific Telegraphic Company had become a decided proposition by this time and we had quite an office in the Grand Central Hotel. We had four wires, one to Chicago, it being the Atlantic and Pacific proper; an old wire of the Great Western Telegraph Company, which ran south and over which on strictly clear days, we worked to Kansas City. Then we had the two Union Pacific wires west.

"The operating force consisted at various times of the following well-known artists: William A. McElroy, at present with the Western Union, Omaha; J. Wesley Ellsworth, Aaron B. Hilliker, Fannie Wheeler, Julia Wirt, John McNevin, John L. Morris, Charles Paxton, William Wallace, Henry Bogardus, "Ed." Schermerhorn, John Hanchett and, I think, A. A. Honey.

"They were all fine operators some of them being stars of the first magnitude. Each and every one of them had an enormous capacity for work, although some of them might be called 'erratic' in connection with the matter of the hours chosen, which were not always those designated by the card. McElroy was one of the most accommodating and best men it has ever been my pleasure to be associated with, always being right on the spot when there was anything doing requiring hard continuous work. Ellsworth was of the old school of operators and gentlemen always being ready to go further and work harder to help any one in distress, than any man I have ever known; he was a humorist and many of his clean incisive witticisms were worthy of a place in literature.

"Hilliker, as has been previously stated, was everything—poet, philosopher, author, comedian, counsellor, comforter, humorist, stage manager and general pooh-bah of the aggregation. He was a finished artist in the making of explanations and

excuses; no matter how apparently glaring the breach of discipline was in which he was involved, his euphonious and sequentially perfect explanation seldom failed to convince the manager that he was the recipient of a favor from Aaron and had no just cause for complaint. When an excuse was necessary, he was certainly 'there with the goods'; his style of delivery was unique and ornate. As an illustration, one morning when he was working in Mr. L. H. Korty's office he came in about three hours late. He walked over to Mr. Korty's desk saying: 'Good morning, Mr. Korty, did you get my note this morning?' 'Yes,' replied Mr. Korty with gravity, 'I got it.' 'Well,' said Aaron, 'that's a mighty strange thing; I sent it by a boy before eight o'clock as I wanted you to know that I could not get here on time.' 'I got it, Aaron,' again replied Mr. Korty. 'Well, now,' said Aaron, 'I'd like mighty well to know what that boy did with that note. I told you that I had been sick nearly all night, and I was suffering so that I just could not get here.' 'Why, Aaron,' said Mr. Korty, 'what's the matter with you any way, haven't I told you that I got your note? What are you driving at?' Aaron saw the twinkle in Mr. Korty's eye and took refuge in his own inimitable way in a burst of laughter, closing the incident by saying: 'Well, I sent it anyway, and you bet I'll make that boy cough up the ten cents I paid him when I see him again.'

"Jeff Hayes says, in his article published April 1, that there was very little amusement for the boys in Omaha at the time he speaks of. While this may be true, I want to say that there were some of the funniest things any one ever saw happened right there. This brings me to the story of 'Hilliker's Goose.'

"One Christmas eve there was to be a live goose raffle at Kennedy's on Harney street. Aaron attended the raffle in company with William Shull, the Burlington ticket agent, who had his agency in a corner of our office. William was a character in his way, and will be remembered by the old boys. It happened that fortune smiled on Aaron, who won a big white gander weighing in the neighborhood of thirty pounds. The raffle closed a little after midnight, when William and Aaron started for home. Thirty pounds of live goose was a big proposition to handle. Owing to the amount of 'festivity' which had accompanied the festivities of the evening, Aaron was in no condition to assume the duties of a common or uncommon carrier. As the gander seemed to be in good health and fine training, William proposed that they make him work his passage home. He procured a stout cord one end of which he tied to the bird's leg, tying the other end around Aaron's waist. The theory of this arrangement was, that the gander would march sedately at the head of the procession after the manner of a drum major in a St. Patrick's Day parade. In practice it was different; the gander had never acted as a drum major, nor had he ever been driven single or double, or been taught to pull a

load. He sat down and listened to the 'shoos,' 'gid aps' and other instructions of his drivers; then either misunderstanding their directions, or remembering the axiom of one of his wild forbears, 'In case of the least doubt, fly,' he flew. Aaron forgetting the cord connection, started after him on a run. The gander started to cut a circle, a telegraph pole intervened, to which, in just a minute, he had Aaron sewed good and tight. After some trouble William got the team straightened out, and with one or two minor mishaps the outfit arrived at the office.

"It happened that I had dropped into the office on my way home that night to see how Hanchett and his 'force' was getting along. I was standing at the counter on the inside thinking about Christmas Past and Christmas to Come, when the front door opened very softly admitting a big white goose, and then just as softly closed again. The goose sat down just inside of the threshold and took a general survey of the office.

"The whole thing was such an unusual occurrence, that I rather excitedly called to Hanchett to 'come here quick,' and I must say that I was very much relieved when I heard him say, 'It's a goose.' The light in that part of the office was too dim to show the cord attached to the goose's leg, so we both started around the counter to investigate the phenomenon. Before we got to the front of the office William and Aaron had stepped inside, Aaron with the cord tied about his waist, standing in front of the goose, evidently to conceal it. He gave us a cheery 'Merry Christmas!' which we countered with the question, 'Oh, where did you get that goose?' Aaron assumed a puzzled expression, and replied: 'A goose!' then looking behind himself he went on: 'A goose! Oh, yes, a goose. Why, Mr. Rheem, I won that goose at Kennedy's.' He then in his comical way, told us of the difficulty he had had in getting the goose to the office. In response to our interrogatory as to what he intended to do with the goose, he said he was going to take him home and have him cooked for dinner the next day, that he always had adored goose meat, the nutritious properties of which he carefully explained to us, but that he did not know how he was going to get him to his boarding house. He said it would be all right if it was a straight road home which it was not, and that every time he came to a corner he was greatly embarrassed as he could not talk 'goose' well enough to tell the bird which way to turn. William, however, was willing to assist him and the two finally got the goose to the boarding house where they took him into the parlor and tied him to the leg of the piano.

"Coming to the office the next morning, I found Aaron very busy, but he had a sort of a troubled look on his face. In a few moments he came over to my desk, saying: 'Well, sir, somebody played a mighty mean trick at our house last night. They brought a live goose home, took him into the parlor and tied him to the leg of the piano; he got to jumping round about daylight, and just

naturally wrecked the whole business. I don't believe they ever will get the goose and bric-a-brac sorted out again in that room. I'd like to know why a goose can't stand still and stay where you put him.'

"I said: 'Why, Aaron, you took that goose home; you and William Shull were in here with it at one o'clock this morning, and took it away with you.' 'No,' Aaron replied, 'this goose is not my goose;' then, in a reminiscent voice: 'I had a goose, but on my way home last night I met a poor woman who told me a pitiful story of six starving children at home, with no turkey for Christmas and no money to buy one. Her sad tale brought tears to my eyes and I presented the goose to her. She thanked me with sobs of joy and bore the bird triumphantly home to her offspring. No, this goose in the parlor is not my goose; in fact, I would not take a goose home anyway, for I never did like goose meat.'

"Hilliker remained with the Atlantic and Pacific Telegraph Company until its consolidation with the Western Union, after which he went west. We used to hear from him at various points, but he suddenly dropped completely out of sight, and I have no doubt but that he fills an unknown grave somewhere in the great western empire where he had made his home for so many years. He deserves a monument alone for the kindly spirit of helpfulness to his fellows while he lived. If any one reading these lines can give me information of him I will be truly grateful."

(To be Continued.)

Telegraph Notes From Unknown Europe.

Primitive as we are accustomed to supposing the east coast of the Adriatic to be, the network of telegraph is fairly complete, and in Istria, at every railway station, as in America, the operator is installed, writes Felix J. Koch, in "Sound Waves." There, and in Montenegro, like the post office, the telegraph is a government institution. Even little Montenegro has its wireless telegraph system, owned by the Prince himself, at Antivari, where the grand cordon of Montenegro was conferred upon Signor Marconi.

At Budapest, in Hungary, the newspapers, one and all, publish the same telegrams from outside, and such a thing as a "scoop," or "beat," is unknown. Hence, much of the necessity for haste in journalistic telegraphing, that is so apparent with us, is there obviated.

Even the higher Carpathians, in the vicinity of Schmecks, have now been connected by telegraph with the greater centers. In Roumania the telegraph and the post office are conceded by the poverty-stricken people to be about the only exemplary institutions of the government.

From Belgrade, Serbia, the frequent regicides make cable tolls to the press agencies an important factor in the telegraph offices, though strict censorship obtains.

How Pool Rooms Are Beaten.

With the opening of the spring racing season the wire tappers, those arch enemies of the poolrooms are beginning their yearly operations. Their first effort of the year occurred recently when they fleeced the New York poolrooms out of more than \$50,000, it is said, on a single New Orleans race.

The scheme of tapping race wires and returning a false winner is not by any means the most up-to-date method of affecting the poolrooms. In fact, it is regarded nowadays as crude, risky and uncertain. There are other methods more elaborate, but less dangerous, by which, it is said, eight or ten men have cleared between \$75,000 and \$100,000 a year out of the poolrooms for the past few years. It is a game upon which even the law would find some difficulty in laying its hands.

At this season of the year certain men meet in New York, the leader of whom is known as "Big Al." to formulate plans for the season. A week later these men will have scattered over the country, North and South. They begin by spotting poolrooms and "clocking" them to ascertain the exact time between the start of a race and the cessation of betting. They also take note of the windows of the poolrooms, and the availability of securing rooms on the opposite side of the street.

It is an imperative rule that no one poolroom shall be done out of more than \$2,000 at a time. It is also the rule to guess on little bets which are straight and to win on big bets which are crooked. Every one of the gang is trained to the game and knows just what to do. With the exception of the leaders, they look like college boys, and it is seldom that they are suspected by the poolroom keepers.

An important essential to the plan is the establishment of a central telephone office. This central office is connected with a telephone in the same house or at some point overlooking the race track, from where a view of the finish can be obtained. Now suppose that the conspirators have planned to fleece half a dozen poolrooms in New York on a certain race. Each one of these poolrooms has a window opening on the street, on the opposite side of which "Big Al's" contingent has hired a flat or a room or a "real estate office," or whatever they may choose to call it. These rooms or offices are fitted with telephones.

On the race programme each horse is given a certain number. Previous to the race to be beaten "Long Jack," who next to "Big Al." is the most prominent in the gang, takes up a known position in the infield from which he can command a clear view of the race. At a window of the house outside the track where the telephone is worked stands one of the men with a powerful field glass watching "Long Jack." Another man sits at the telephone connecting with the "central office." At the "central office" there

are two telephone men, one at the race track wire and the other at the wires connecting with perhaps three "real estate" offices opposite the poolrooms to be fleeced.

In the real estate offices men are at the 'phones and also at the windows. In the poolroom about the time the race is to be run a harmless looking young man takes his stand near the window, where he can be seen from the street. Thus the entire gang is "set" and ready for business.

The horses get away from the post. "Long Jack" never moves his eyes from them, and the man outside the ground never takes his eyes from "Long Jack." Half a furlong from the finish "Long Jack," with his wonderful gift of race reading, knows just how the race is going to finish. He looks over at the telephone house and raises his left hand with his glasses high in the air. The man at the window without losing an instant, says, "Left hand up." "Left hand up" runs along the wire from the track to the gang's "central office." "Left hand up" races along the wires to the "real estate" offices.

There the operators call out the signal to the man on watch, who raises his left hand in the air. The man at the poolroom window rushes over to the poolroom man and bets all that he can get down on the horse which by this time has won. Only an instant is required to make the bet. A few seconds later by the telegraph route comes the customary "They're off!" followed by the usual calling of the race to the finish.

When the poolrooms have been thus beaten to the extent of \$2,000 each in one day the swindlers close their "offices" and turn their attention to some other city.

The race track owners, it is said, make no special effort to checkmate the conspirators or put an end to the swindle. As a matter of fact they would like to see every poolroom in the country ruined in order that their gate receipts might be increased.

Wonders of the Forests.

Old and worn-out steel rails are used for telegraph poles in Mexico, with a couple of holes drilled at the top so that cross-bars can be fastened on, writes Wm. E. Curtis in the Chicago Record-Herald. This is a measure of economy and also of necessity, because, according to Mr. Morris, the assistant general manager of the Tehuantepec Railway, it is impracticable to use wooden poles because the soil is so rich that they would take root and grow. Mr. Morris declares that if they should set up an ordinary pole of seasoned wood in almost any place on the Isthmus of Tehuantepec it would begin to sprout as soon as the rainy season commenced. Within six months it would be a flowering tree and the branches would get tangled up in the wires. That is the reason why iron is used for telegraph poles.

You can't afford to be without TELEGRAPH AGE.

S. E. Leonard, Assistant Superintendent at Denver.

Stark Edward Leonard, whose promotion from the managership of the office of the Western Union Telegraph Company, at El Paso, Texas, to be assistant superintendent of the same interests at Denver, Col., as was announced in these columns May 1, was born at Milton, Fla., February 8, 1875. From the position of a messenger boy at Inverness, that state, he became at the age of eighteen an agent and operator at Martel. Failing health induced him to seek another climate as a means of restoration and he went to Mexico, where he found employment as joint despatcher for the Mexican Central and the Mexican Northern Railway, at Escalon. During a portion of 1896 he held a clerkship at El Paso, Tex., for the Mexican Central Railway, but this occupation proved but a temporary one, for in December of



STARK EDWARD LEONARD.

Assistant Superintendent Western Union Telegraph Company, Denver, Colorado.

that year he accepted the position of superintendent of telegraph and train master of the Rio Grande, Sierra Madre and Pacific Railroad. Here he remained for nearly six years, finally resigning to enter the employ of the Western Union Telegraph Company as its manager at El Paso, on November 21, 1902. The call to the assistant superintendency after a managerial service of four years may be accepted as a potent recognition of the worth and executive capacity of the appointee.

Billiards by Telegraph.

Chess by cable has long been an attraction, and perhaps the popularity of this game was responsible for the telegraphic billiard match recently played by two men some three hundred miles apart. The table was marked into squares small enough to accurately place the balls. At the end of each play the exact position of the three balls would be telegraphed the other and the balls on the second table placed in precisely the same position as they were left on the first.

Alaska Cables.

Alaskan cable and telegraph tolls paid to the United States government in March aggregated \$14,500, and exceeded the receipts for any previous month. In the fiscal year, which ended last June, the government collected more than \$100,000 in tolls, and the war department expects that the amount taken in for the current year will be at least fifty per cent. greater, as the cable from Seattle to Valdez was not in operation all of the last fiscal year. Receipts have increased rapidly since the completion of the cable, which is a feeder for the government telegraph lines connecting with all the principal towns in the territory.

In addition to its large submarine cable systems in Alaska and the Philippines, it is now stated, in Washington, that the United States Government is in favor of operating telegraph and cable lines to Panama and favors the purchase, installation, operation and maintenance of a submarine cable between Key West, Fla., Guantanamo, Cuba, and the Panama Canal Zone, costing \$927,000. Secretary Taft says on the subject: "Experience has demonstrated the dangers of such cable communications being in the power of foreign governments to withdraw the rights of the companies in question, as was particularly emphasized in connection with the cable concessions at Panama. The opinions of these military experts as to the urgency and importance of the situation are strongly re-inforced by the following facts: "First—That the direct cable from Jamaica to Colon has been interrupted for fourteen months. Second—Complications in connection with the French Cable Company in Venezuela, and violent earthquakes, caused such an interruption of the lines that within the past month no cablegram could reach the northern part of South America from Buenaventura to Para, Brazil, save through Europe. The war department was also informed, under date of February 9, by the Central and South American Telegraph Company, that the West Indies cable system, although duplicated, had been interrupted." This argument is backed up by calling attention to the success that has attended the construction and operation of telegraph lines and cables to Alaska: "The signal corps lines north of Seattle, known as the Alaskan system, would as an investment have been considered as exceedingly unpromising by commercial companies. The chief signal officer of the army was confident, before it was laid, of its great promise from a commercial point of view in addition to its acknowledged administrative value to the United States in general and to the army in particular. His views were considered somewhat visionary in 1901, but events have abundantly justified them by bringing in gross receipts from commercial sources alone at the rate of \$180,000 for the current year, besides doing an unpaid official business of about \$100,000 for the United States."

Telegraphers Mutual Benefit Association.

The Telegraphers' Mutual Benefit Association has this interesting story to tell printed on the back of its assessment notice for May, headed "Insurance at Less Than Cost." A large part of the usual cost of life insurance is the amounts paid for salaries of officers, commissions to agents, rent of offices, etc. From all these expenses the Telegraphers' Mutual Benefit Association is free. Its officers and over 120 agents serve without pay, and its rent, light and heat are furnished without charge by the two great telegraph companies and others. Its only expenses are for clerical service, postage and stationery, aggregating about \$6,000 per year. These are paid twice over by the interest received from investments.

Under such circumstances it may be expected that the rates charged by the association would be less than those charged by the standard companies. A look at the following table will show whether this expectation is justified:

YEARLY COST PER \$1,000 INSURANCE				
Age	T. M. B. A.	N. Y. Life.	Penn. Mutual.	North Western.
18 to 30	\$14.00	\$23.00	\$21.50	\$23.00
30 to 35	17.50	28.00	25.00	27.50
35 to 40	21.00	32.00	31.00	30.00
40 to 45	28.00	38.00	37.50	38.00

There is no excuse for any telegrapher to go outside of the fraternity for insurance unless he wants more than the association can furnish, which is, full grade, \$1,000; half grade \$500.

(The compiler of this statement might have added that out of the charges made by the Telegraphers' Mutual Benefit Association and from the unexpended balances received from the interest on reserve fund of \$250,000, and other sources, a sum aggregating from \$10,000 to \$20,000 per year is added to the reserve surplus, thus making the association a bulwark of financial strength.)

Wireless Telegraphy.

An extension of the wireless telegraphy system of Lower California is reported by Consul Kaiser, at Mazatlan, Mexico. The machinery installation will be made at San Jose del Cabo, at the end of the peninsula, and at the port of La Paz, in Sinaloa, by a German company, which secured the contract, and will install benzine motors with cooling machinery, continuous-current dynamos, storage batteries, etc.

The United States Government has extended its weather bureau service and storm warnings to all ships equipped with the American DeForest wireless system. News of impending changes in the weather will be flashed to all such ships whose captains will be able to shape their course so as to avoid storms and other meteorological dangers. Under the auspices of the Canadian Government, the steamship Arctic, with which her commander, Captain Joseph E. Bernier, will attempt to reach the North Pole from the Atlantic side, is to be equipped like Walter Wellman's ship the Frithjof, with the American DeForest Wireless Telegraph Company's system.

Transatlantic wireless telegraph communication was recently accomplished by the De Forest Wireless Telegraph Company between its high power station at Manhattan Beach, Long Island, and Glengariff, County Cork, Ireland. Dr. De Forest, the inventor, was himself stationed at the latter point and received the messages by means of temporary antennae hung from a tetrahedral kite invented by Alexander Graham Bell, of Bell telephone fame. Preparations were being made for a demonstration of this work for the benefit of the press, but before the plans could be carried out the British Post Office department prohibited further experimentation. It is expected, however, that these tests will be resumed later on.

Much has been published recently regarding alleged litigation affecting the DeForest Wireless Telegraph Company. The New York Mercantile and Financial Times of April 8 makes a complete denial of the advertised statements in the following terms: "The statement, so industriously circulated, to the effect that the United States Supreme Court had rendered a decision adverse to the De Forest Wireless Telegraph Company was a lie, pure and simple, made out of 'whole cloth.' There has been no suit against the De Forest Company, pending before that court, consequently there could be no decision, adverse or otherwise. The motive which led to the creation and circulation of this lie is so manifest that comment upon the same is unnecessary."

An item is going the rounds of the press to the effect that in remote parts of Norway bears have a fondness for climbing telegraph poles and finding a perch on the cross arms, sway backward and forward, enjoying the rocking motion thus produced, until the poles finally fall under this playful treatment.

In our previous issue we recorded the fact that one of the troubles telegraph managers have to deal with in Africa was due to the rubbering habits of giraffes who get their long necks inextricably entangled in the wires and in their efforts to free themselves pull down not only wires but frequently poles as well.

In the United States the depredations of that human animal, the wire thief, who climbs the poles and strips them of their valuable copper threads, constitute one of the principal sources of worry and annoyance to telegraph officials. Of the three forms of evil mentioned clearly the one which curses this country is the greatest. It is refreshing, however, to note that thus far over fifty of these thieving scoundrels have been convicted, sentenced and sent to prison for their offenses, while a number of others are now awaiting trial and are in a fair way to receive like punishment.

The new classified catalogue of books on the telegraph, telephone, wireless telegraphy, electricity, etc., published in TELEGRAPH AGE, may be had for the asking.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

ST. LOUIS, WESTERN UNION.

Miss Rose Matthews, of this office, was married recently to Mr. F. Schluetter. The force presented the couple with a handsome gift.

A call for help was asked by the Salt Lake City, Utah, office, at the time of the San Francisco disaster, and the following named operators were sent in response thereto: C. A. Clark, Charles Rapp, George Goehringer and Roswell Tucker.

Mr. James Campion and J. Rowan, combination men of this office, were sent to Oakland, Cal., to assist in the Wheatstone department at that point.

ST. LOUIS, AM. TEL. AND TEL. CO.

The office of Mr. Earle Harlan, wire chief, has been removed to the district headquarters of the company in the Star Building, 12th and Olive streets.

The force in the testing and repeater station at Beaumont and Locust streets is now as follows: H. D. Roach, assistant wire chief, in charge; assistants—D. B. Grandy, at the test board; F. L. Mounce and B. S. Rounds, on leases and repeaters; F. C. Nitche, early night trick; Lee E. Whitmore, all night trick; W. L. Raby, inspector.

PHILADELPHIA, WESTERN UNION.

I sell and rent all makes of typewriters at rock bottom prices. Cash or time payments; latter made easy. Also agent for celebrated Vibroplex Sending Machine, Smith Visible Mill, and Hudson Word Counter. D. Good, Western Union office, 15th and Chestnut streets, Philadelphia.

Miss Ada Hussey, one of the finest operators in her day and who had been ill for several months, died recently. She was well and favorably known among the older employees. As a mark of esteem and respect, a floral emblem was sent to the house of mourning, and quite a representative body of employees attended the funeral.

Assistant Traffic Chief Mahlan G. Moyer, who was absent about five weeks on account of a general breakdown in health, has again returned to duty.

Several hundred dollars was quickly collected and cheerfully given by the employees here for their destitute brethren in San Francisco.

After several months spent in the South, Harry Standifere has again returned to this office.

Mrs. Powers, Mr. Lynn from the Postal Company; Mr. Gerow from Buffalo, N. Y.; H. Carr, from Richmond, Va., and N. K. Ramson from Langhorne, Pa., are new arrivals.

Rodney Smith, a highly esteemed employee of this office, who came to us from Denver, Col., about two years ago, died suddenly May 9 after performing his day's work. Neuralgia of the heart was the cause of his death.

PHILADELPHIA, POSTAL.

The marriage of Mr. J. Howard Baker, who holds down the cable wire, was the theme of interest and congratulations from all his friends. Mr. and Mrs. Baker spent their honeymoon at Cape May, N. J.

Miss Mary V. and Mr. James Hagan were hurriedly called to Williamsport, Pa., recently on account of the illness of their brother Edward, reaching his bedside before he died.

The mere removal of his mustache caused such an altered appearance that Robert Mecredy, of the Commercial Exchange office, passed through quite an experience before his acquaintances became accustomed to the change.

Having returned from his trip to the Pacific Coast, Mr. H. H. Hill, of the West Philadelphia office, is full of interesting reminiscences. He escaped the San Francisco disaster by a couple of days.

After several weeks' hospital treatment, Mrs. H. T. Polhemus has resumed her place on the Jersey ways.

CHICAGO, WESTERN UNION.

Charles White, for some years chief of the St. Paul division, days, has resigned and gone to Nashville, Tenn.

R. W. Kean, manager of the Sioux City, Ia., office, was a visitor here a few days ago.

Robert Watson has returned from Dallas, Tex., where he has been working a report circuit for a year.

The sudden death of Walter Finley, eldest son of Assistant Chief Operator C. H. Finley, occurred recently.

NEW YORK, POSTAL.

Mr. P. F. Dowd, manager of the 70 West 58th street office, has been transferred to 956 Eighth avenue, vice F. Cohen, resigned, and Mr. O. P. Coleman has been appointed to the vacancy.

Mr. J. E. Wilson, manager of the 1281 Broadway office, has resigned.

Mrs. G. A. Kennedy, manager at the Hotel Astor, has resigned.

Harold Dobbs has been appointed western traffic chief. The advancement of Mr. Dobbs has been rapid, owing to the fact that he devoted himself closely to business; he served as check clerk only a few years ago.

W. J. Kavanaugh has been appointed assistant wire chief.

Thomas Brooks has been appointed annunciator chief.

George Fink, formerly southern traffic chief, this office, died at his home in Buffalo, May 6. He had been in ill health several years and was a victim of neurosis.

T. Bracken, aged forty years, an expert cable splicer, of the Postal Telegraph-Cable Company, New York, died on May 5.

S. A. Coleman, for years a chief operator in this office, and one of the best known of telegraphers, has resigned to accept a position with a broker. The best wishes of the force follow him.

The arrivals here lately include: Mrs. K. Merrit, William Tucker, Albert Hannon, John W. Hodges, S. A. Grover, W. A. Howden, B. H. Dykes, J. H. Shrader, Bernard Brady, Frank J. Reidel, A. M. Levenson, J. L. Gilbert, C. W. Smith, James A. Galumbeck, A. B. Fiske, W. J. Brannan, Charles W. Brooks, A. V. Schermerhorn, George Kern and J. P. Judge.

The departures are: E. W. Applegate, H. R. Waterbury, H. A. Yoell, the latter to the Postal at Oakland, Cal.; J. A. McDermott, E. B. Haggerty, to the Hoffman House as night operator, and Miss Fitzgerald, to Bath Beach, Brooklyn, as operator.

NEW YORK, WESTERN UNION.

Mr. Lawrence Keating, who recently met with a serious accident, remains in about the same condition as previously reported.

Mr. John Dorley, formerly a clerk in this department, died in St. Peter's Hospital, Brooklyn, on May 4.

E. J. Hart of this office, formerly secretary to General Manager Merrill of the East Coast Hotel System, has accepted a position as private secretary to Mr. Fred. Sterry, one of the most prominent hotel managers in the country.

Mr. Lysaght, from Portland, Me., was a recent arrival.

Mr. W. J. Keegan has resigned to accept a position with the Atlas-Portland Cement Co., of this city.

My Motto—Honorable Dealing.

My Specialty—Factory rebuilt Remingtons and Smith typewriters. A \$1 copy of latest Phillips' Code, given with each **Cash** order for the new Model No. 3 Mecograph. Correspondence invited. D. A. Mahoney, 253 Broadway, New York.

The New York Telegraphers' Aid Society having forwarded \$500 as a measure of relief to their sister society in San Francisco, the following telegram, dated at Oakland, Cal., May 8, in acknowledgment, has been received:

"To J. C. Watts, President New York Telegraphers' Aid Society, New York City:

"Have received from Supt. F. H. Lamb re-

mittance of five hundred dollars referred to in your message of to-day. On behalf of the San Francisco Telegraphers' Aid Society I beg to express sincere appreciation of your action in making this generous contribution, which will do much to relieve the wants of your co-workers at San Francisco.

"I. N. Miller, Jr., Treasurer."

OTHER NEW YORK ITEMS.

Mr. B. P. Hancock, the well-known telegrapher, at one time city superintendent of the Postal Telegraph-Cable Company at Chicago, Ill., and who for the past year has been identified with the United Electrical Manufacturing Company of New York, has severed his connection with that concern and has accepted a position with a New York broker.

Mr. S. H. Flagler, manager of the telegraph department of the Standard Oil Company, New York, who recently was called to Toronto, on account of the death of his mother, was shortly after followed on a similar errand by Mr. M. O. Hoffman, an old time telegrapher, but now secretary to one of the general superintendents of the same company, who went to Berlin, Ont., his native place, to attend the funeral of his mother, who died at that point on May 1.

Mr. Frank C. Mason, superintendent of police telegraph, Borough of Brooklyn, New York, who is suffering from an attack of asthma, has gone to his country home, "Glen Alex Farm," at Washington Mills, N. Y., on a sixty-days' leave of absence. Sergeant Julius Zeidler is in temporary charge of the office.

The International Telegraphers' Association, so-called, the alleged purpose of which is to establish a home for aged telegraphers at Nyack, N. Y., and of which one F. A. Thomas represents himself to be the general secretary and treasurer of the enterprise, is the latest scheme promulgated to swindle those who feel charitably disposed toward old and indigent telegraphers. It appears that Thomas has called industriously upon many persons in New York soliciting money in behalf of this undertaking. His mode of procedure is to quote such well-known names as George J. Gould, the principal owner and vice-president of the Western Union Telegraph Company, and Clarence H. Mackay, president of the Postal Telegraph-Cable Company, both of whom he avers hold the enterprise in high esteem and have subscribed to the fund, one to the extent of \$250, and the other of \$1,000. It is almost needless to say that such statements are utterly false. The project of a telegraphers' home, as presented by this man Thomas, who has a bad record in like matters, is a fraud through and through, and whoever is approached by him would be justified in calling in the police.

Orders for books on telegraphy, wireless telegraphy, telephony, all electrical subjects, and for cable codes, will be filled by TELEGRAPH AGE on the day of receipt.

International Telegraph Tournament at Boston.

BY S. F. SHIRLEY.

The earthquake catastrophe and the unusual amount of work that it brought to telegraphers caused a sort of lull in the arrangement for the international tournament of the Boston operators, but it did not diminish their determination in the least. After a conference between the executive committee and the leading officials of the companies in Boston, it was decided to set the date forward, and the affair was postponed from Friday, June 8, until Friday, June 29. This will give the committee three weeks more in which to work out the success of the contests.

There is really little that can be added to what was published in the April 16 issue of TELEGRAPH AGE. The classes have all been decided upon, but the full list of prizes cannot be announced as yet. This, however, is of no great moment, as the committee has already decided and pledged itself that besides the trophies offered in the way of "plate," that there shall be seconds of proportionate value and cash added. The classes as arranged are as follows:

RAILROAD OPERATORS.

Sending and receiving contest; open to operators who have been in actual railroad work for two years or more; each entry must be endorsed by the division operator or superintendent of telegraph under whom the entrant was employed.

Class A.—Sending 20 ordinary railroad messages.

Class B.—Receiving 20 ordinary railroad messages on a typewriter.

BROKER OPERATORS.

Class A.—Sending 20 regular broker messages, quotations or orders.

TEAM MATCH—FOR MACKAY TROPHIES.

Open event for teams of two men; sending and receiving messages "bonus" style; Postal Telegraph-Cable Company rule to govern. Sample messages of Postal "style" furnished each entrant.

PRESS OPERATORS.

Class A.—Sending 350 words straight press matter.

Class B.—Receiving 350 words straight press matter.

Class C.—Receiving 500 words "code" matter from unknown sender.

Besides the above there are two classes that may possibly be added—a message class, open event:

Class A.—Sending 20 messages; Class B.—Receiving 20 messages; Western Union rules as to transmission and receiving to govern the contest.

At the present time the officials announce that the prizes will be: For receiving in the railroad class, a typewriter valued at \$100; in the broker class, a trophy valued at \$150, contributed by Clarence W. Barron, of the Boston News Bureau. For the "press operators" the Boston Herald, Globe and American will give handsome trophies as first prizes.

The "team match" will undoubtedly prove the greatest feature of the tournament, as it is some-

thing never before attempted. For this contest Mr. Clarence H. Mackay has given four beautiful cups, two firsts and two seconds. The Postal rules will govern this contest, but there is in reality little difference between the style of the two large companies, except that the Postal omits the word "paid."

In the May 1 issue of TELEGRAPH AGE the published interview headed "International Telegraph Tournament in Boston" was intensely interesting to those who are managing the coming contest. It was, indeed, more than this, it was instructive. But there were a few things that the speaker had either lost sight of or was in ignorance of. In the first place the tournament of June 29 is not a private or corporate enterprise, it is designed for charity. Every cent above actual expenses derived from this tournament is pledged to go toward the endowment of a free hospital bed for telegraphers. The Boston operators now own a \$2,100 equity in a bed at the Carney hospital. It is their hope that they will be able to raise the additional \$2,900 necessary in order that they may control it outright. This bed is not held by any class or creed; it is everything that its name implies, a free hospital bed, where any telegrapher, should misfortune overtake him, will receive the very best of care. This, in itself, explains why cups and other merchandise are offered as prizes. These articles are contributed by generous friends, thereby allowing the gentlemen handling the affair to devote every cent possible to the charity fund.

With the exception of the Mackay cups, and the Carnegie cup, which is to be given to the winner of the greatest number of points in all classes—except the railroad—all the other prizes are "useful rather than ornamental." For instance, the first prize in Class B, for press operators, receiving 350 words straight press, is given by Gen. Charles H. Taylor, editor of the Boston Globe, and consists of a chest of silver valued at \$150. Any operator who will take the trouble to inquire as to what this means will be most agreeably satisfied. The Herald and American prizes are of equal value and usefulness.

In regard to the judges, the Boston gentlemen so serving have the advantage of former tournaments both through advice and participation, and there is no doubt they will readily correct any errors that have previously been made.

But there is one fact that must not be lost sight of, and that is that this is not a personal or corporate affair; it is for charity pure and simple.

Boston, May 12.

There has been a considerable increase in the postal and telegraph services of Argentina; 1,928 offices are open, being an increase of fifty over 1904. The national government owns and works 15,400 miles of telegraph lines, in addition to the system maintained by the provinces and the railways. The revenue of this service for 1905 was \$343,500, some \$27,500 more than was anticipated.

Telegraph Conditions in San Francisco.

The telegraphic situation at San Francisco is rapidly recovering under the energetic measures adopted by the two companies in their efforts looking toward re-establishment. When it is remembered that the utter annihilation of all telegraph offices, together with their equipment, occurred within the stricken city, and that all wire connections were broken, the magnitude of the task which confronted the telegraph officials, first to establish permanent outside communication, and then to build and organize temporary offices, was an undertaking which in perplexing magnitude under existing chaotic conditions, taxed ingenuity to an extent never before experienced. No delay was tolerated, and the inherent recuperative power and resources of the telegraph companies became at once manifest. The results achieved and the service rendered has redounded to the immeasurable credit of the telegraph in America.

To show the activities that were immediately put in operation, orders were issued to at once rush necessary men and material to San Francisco. This was done, and immense quantities of apparatus were soon made available.

The day following the earthquake, the Western Union Telegraph Company arranged to have a building erected at West Oakland, 100 by 50 feet in size, with an iron roof. In this building dynamos, gas engines, switchboards, quadruplex, duplex and Wheatstone machinery, a three-carload lot brought by Mr. L. McKisick, the electrician of the Western division, from Chicago, were installed and made an exact duplicate of the main office which had been destroyed in San Francisco. The current to operate the dynamos was secured from the Southern Pacific Railroad Company. Aerial cables were erected from this office to the city office at Oakland, where direct connection with all of the principal cities, and the wires in the cables leading over to San Francisco and through the underground system were used as legs to connect the branch offices in the ruined city direct with all important outside points. When it is considered that this office was not only established but built, and in full working operation within a week after the fire had destroyed the main office, it will be understood why the Western Union company resumed the prompt handling of all business to San Francisco and outside points.

A building was also rented in Oakland to accommodate General Superintendent Frank Jaynes, and Superintendent F. H. Lamb, and other officers of the company. This building will continue to be occupied until a suitable office structure can be erected in San Francisco, presumably on the same site as was occupied by the company before the earthquake.

The Postal Telegraph-Cable Company also lost no time in establishing a main office at Oakland. This is fully equipped, and at this point

the headquarters of the company will doubtless remain until such time as a building can be prepared in San Francisco. In the meantime numerous branch offices, temporary in character, have been and will continue to be opened up in the burned city, from which points traffic is being promptly handled.

Mr. E. C. Bradley, vice-president of the company, who went to California from New York immediately following the disaster, is still at San Francisco, where he remains in supervision of the affairs of his company. Mr. J. D. Blake, superintendent at Seattle, who hurried down to the stricken city immediately the news of the earthquake was received, and who was enabled to render efficient service at the outset of the trouble, has returned to his home at Seattle.

Recalling the day of the earthquake, here is a copy of the original dispatch received at the New York office, dated April 18, announcing the shock:

"We had a terrific earthquake here at 5.13 a.m. There is an immense amount of damage in the city and our office is about wrecked. Roof fallen in. It's a seven-story building. Our power is gone. None of us hurt, but they are carting the dead from fallen buildings. Many fires in all directions. No water to fight them. Probably heavy loss of life in town. Please tell G. S. am going to get out of office, as we have a little shake every few minutes and it's me for the simple life."

General Superintendent L. W. Storrer pays this tribute to the faithfulness of an employee: "A real heroine was our receiving clerk, Miss Brady, who rushed to the main office, nearly three miles from her home, and was taking in business a little after six."

New Haven, Conn., is rapidly developing as an important railroad, telegraph and telephone center. The general offices of both the New York, New Haven and Hartford Railroad and the Southern New England Telephone Company are located in that city, while the headquarters of the seventh district of the Western Union Telegraph Company, F. E. Clary, superintendent, were on May 1 established at this point, being removed thereto from Hartford.

The automobilists are now clamoring for the removal of telegraph poles along the highway. They claim that when their machines become unmanageable they invariably collide with telegraph poles and are consequently smashed and sometimes the occupants are severely injured and in some instances killed. Some of the automobilists believe that if it were not for the telegraph poles their machines would have a clear way into fields, thus doing no particular harm except to knock down fences and occasionally run over someone.

The Cable.

The Central and South American Telegraph Company of Valparaiso, Chile, has been authorized to erect cable stations at ports north of Valparaiso, or in their neighborhood.

A combined paying-out and picking-up machine has just been completed in London for the new cable-ship "Burnside," belonging to the United States Government. The machine is driven by two independent high-pressure engines, which may be employed singly or in pair to drive either or both of the drums. The drums are five feet eight and one-half inches in diameter, and the maximum pull obtainable is twenty-five tons at 1 knot per hour. The different gears give speed ranges up to 4 knots per hour, at which speed a pull of about six and one-quarter tons can be exerted. The holding-back and hauling-off gears are mounted on the bridge behind the main drums, and are provided with an automatic free-wheel arrangement so that the machine can be reversed to pay out after picking up without putting clutches in and out of gear.

At a special meeting held May 8, stockholders of the Mexican Telegraph Company voted to capitalize the earnings expended for the third Mexican Gulf cable and other betterments by increasing the capital stock from \$2,000,000 to \$3,000,000. The new stock will be distributed to stockholders as of record.

Both of the Eastern Telegraph Company's cables between New Zealand and Australia suddenly broke on April 23, the supposed result of submarine disturbances. Both cables belong to the Eastern Extension Company, and run from Sydney, New South Wales, to Nelson, New Zealand. Another cable runs from Auckland to Brisbane, Australia, and belongs to the British Pacific Company.

Cables interrupted May 11, 1906:
Tangier, "via Cadiz" Feb 18, 1906
Venezuela Jan. 12, 1906

Messages may be mailed from
Curacao or Trinidad
French Guiana (Paramaribo-Cayenne cable) Apr. 20, 1906
Mail from Paramaribo
Pinheiro, "via Cayenne" Aug. 13, 1902
Interrupted to Manaos May 8, 1906

The cable between Cadiz and Teneriffe has been temporarily repaired. Communication is restored, but is not considered entirely reliable. The Spanish administration does not invite traffic, but would admit traffic under precarious conditions, that is, in case route "via France-Dakar" be interrupted.

The cable between Jamaica and Colon interrupted on January 9, 1905, was repaired by the cable steamer "Cambria" on May 4, 1906.

The Anglo-American Telegraph Company will, the St. John, N.F., papers state, at an early date lift the cables at Placentia and "re-lay them to Come-by-Chance, at the head of Placentia Bay,

whence they will be connected with the cables at Bull Arm, Trinity Bay, the repeating instruments at Placentia being located at St. Pierre in the future. Electrician Scotland removed these instruments and proceeded to St. Pierre, and the Placentia cable office, after having been open day and night for almost forty years, is now reduced to the status of a local telegraph office, open from 9 to 9 only. The five operators working there will be removed to Heart's Content and St. Pierre."

Publishers' Press Annual Meeting.

The annual meeting of The Publishers' Press was held May 8 at its New York offices in the Park Row Building. President J. B. Shale's report showed the organization to be in a gratifying condition.

Frank A. Munsey, publisher of the Washington Times and the Boston Journal, and Lynn R. Meekins, general manager of the Baltimore Herald, were elected directors.

The other directors are W. J. Connors, Thomas P. Peters, J. B. Shale, James Rascovar, Andrew McLean, T. J. Keenan, S. Herschman, R. S. Lowry, Charles J. Bellamy and H. D. Burrill.

The directors re-elected all the old officers of the association, as follows: J. B. Shale, president and general manager; Andrew McLean, vice-president and treasurer, and T. J. Keenan, secretary.

John F. Tremain was reappointed assistant general manager and W. W. Campbell assistant treasurer. George Noeder remains day news manager, and John Nevin night news manager. There will be no change in the management or policy of the association.

President Shale said that much new business was in sight and that several large contracts were about to be signed with leading newspapers.

General Mention.

The Canadian Pacific Railroad Telegraph Department has equipped its Montreal-North Bay line with a phantoplex circuit.

The House committee on coinage, weights and measures by a vote of seven to four on April 27, declined to recommend the bill providing for the introduction of the metric system of weights and measures in the United States.

Prof. Pierre Curie, who with his wife, Mme. Marie Curie, discovered radium, and did such important work in radio activity, was killed in Paris on April 19 by being run over by a wagon.

Mr. J. E. Palmer, of Reno, Nev., in a recent letter writes: "Your articles on Storage Batteries running in recent issues of TELEGRAPH AGE are very much appreciated by myself and others."

Mr. F. O. Nourse, general inspector, Southern division, Western Union Telegraph Company, Atlanta, Ga., in a letter renewing his subscription states: "This dollar and a half is invested at one hundred per cent."

A young lady who had an offer of marriage from an absentee and who was requested to make known her decision by telegraph, on going to the telegraph office and learning that she could send ten words for twenty-five cents, wrote a message in which the word "yes" was repeated ten times.

The German government has fixed June 28 as the date for an international wireless telegraph convention, to be held at Berlin. The United States has been asked to participate in this convention, the purpose of which is to make regulations for the control of wireless telegraph systems.

Mr. C. D. Livermore, chief operator of the Western Union Telegraph Company, Portland, Me., recently was compelled to submit to the amputation of his leg, the primary cause being lack of blood circulation in his foot. Although Mr. Livermore is over seventy years of age the prospects of his complete recovery are good.

Mr. W. A. Houghtaling, a well-known New York telegrapher, now representing the Rowland Printing Telegraph Company, of Baltimore, Md., at Berlin, Germany, in a recent letter states: "I am enclosing remittance to cover my subscription and thank you for keeping the links together. It's like receiving a long letter from home to re-

ceive TELEGRAPH AGE regularly. It has kept me in close touch with the telegraph events at home during my stay in Germany."

Mr. D. B. Grandy, of the American Telephone and Telegraph Company, St. Louis, an old telegrapher, expresses his appreciation of TELEGRAPH AGE in the following note: "I learn through your current issue that three old friends of mine, William S. Logue, Percy K. Jones and Robert J. Sheehy, all acquaintances of thirty-five years ago, have gone over to the silent majority. I do not see how any telegrapher whose services date back a few years and who takes any interest in old friends and acquaintances, can get along without TELEGRAPH AGE. Scarcely an issue reaches me that does not contain information of former friends, many of whom I have not met for years, but in whose welfare I shall be interested while memory lasts."

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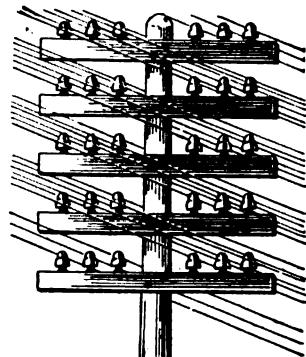
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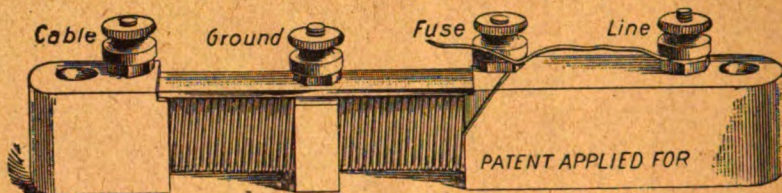
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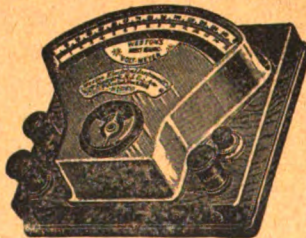
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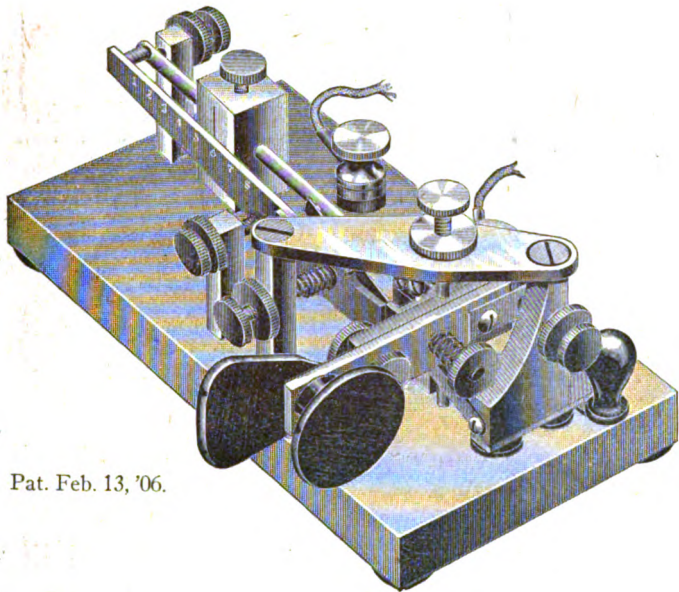
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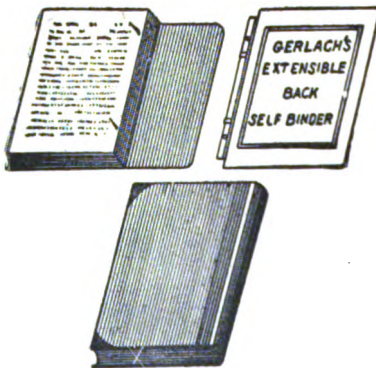
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TELEGRAPH AGE

II.

NEW YORK, JUNE 1, 1906.

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SOME POINTS ON ELECTRICITY.

New Double-Loop Repeater. — Comparative Efficiencies of a Polar and a Neutral Relay.

BY WILLIS H. JONES.

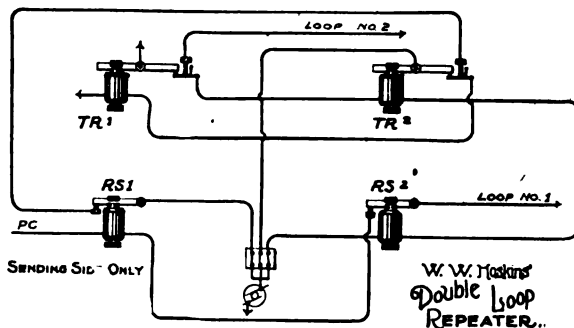
Mr. W. W. Hoskins, chief operator of the Postal Graph-Cable Company of Texas, Dallas, Tex., devised a double-loop repeater as shown in the accompanying diagram. This, he believes, possesses minimum simplicity of apparatus and is easier to understand than the old style triple transmitter method. The diagram shows the send-side only, the receiving arrangement being electrically alike in all repeaters for this purpose. Operation is as follows:

The current from the polechanger of the duplex with which the repeater is connected, after traversing the coils of repeating sounder No. 1, the contact points of repeating sounder No. 2, is the ground at the terminal of loop No. 1, that is to say, at the branch office.

When the repeating sounder lever when closed gives energy to the coils of transmitter No. 1 through the contact points of transmitter No. 2. The breaking of circuit No. 1, either by means of the duplex apparatus or the branch office operator on loop No. 1, of course, opens repeating sounder No. 1, which in turn opens transmitter No. 1. The opening of transmitter No. 1 transfers the ground of repeating sounder No. 2, and transmitter No. 2, to the grounded loop No. 2 to the bar of trans-

mitter No. 1, thus holding transmitter No. 2 and repeating sounder No. 2 closed and at the same time removes the battery from loop No. 2. The opening of loop No. 2 in a branch office opens transmitter No. 2 and repeating sounder No. 2. It may be seen that the opening of transmitter No. 2 holds No. 1 transmitter closed by transferring its battery lead from repeating sounder No. 1 to the bar of transmitter No. 2, while the opening of repeating sounder No. 2 breaks the circuit of the companion loop No. 1.

An interesting subject was recently brought up by a quadruplex attendant regarding the wide degree of difference existing between the respective working efficiency of a polarized and a neutral multiplex relay in wet weather. The information sought was as to whether there was any other reason or reasons for the superiority of the polarized instrument other than that explained by the fact that the latter responds to direction



of current only, while the former absolutely ignores polarity of current.

There are several good reasons to account for the superiority of the polarized relay other than the conventional "blanket" explanation covered by the words "direction of current." It is not at all improbable that the alterations in the polarity or direction of current alone, really contribute less toward building up the great efficiency of that instrument than they are given credit for.

In the writer's opinion the two principal reasons are: First, that a differentially wound polar relay is not affected, perceptibly, by alterations in the volume of any temporary marking current following in the line; second, it is more sensitive to the influence of very feeble currents than the neutral instrument because its coils are wound over a permanent steel magnet, the initial magnetism in which the latter greatly assists and am-

plifies the final magnetic strength of that relay.

The first of these two claims is verified every day in the operation of an ordinary quadruplex circuit. When the distant transmitter is closed the volume of current flowing through both home relays is three or four times as great as it is when the transmitter is open. Yet the incoming signals on the polar relay are not interfered with in the least. The neutral relay, only, feels the alterations in volume. The steel magnet assists the current in this way. The force with which a relay magnet will attract or repel its armature is represented by the figures representing the square of the total number of lines of force flowing through the iron core.

Thus, for example, if the number of such lines in the magnet due to a feeble current alone is 10, the strength of the magnet will be represented by 100. If, however, the magnet is steel, as is the case of a polarized relay, and contains, say, two lines of its own there will be twelve lines in all. Hence the strength of the magnet will be 144, or a gain in efficiency of nearly fifty per cent. It should now be plain that a neutral relay, having no such initial lines to build upon, cannot possibly compete with its more favored companion.

The worst enemy a neutral or single line relay has to contend with is its retractile spring, because the tension strength of the latter is a fixed value and therefore cannot automatically adjust itself to the variations in the strength of the magnet's pull due to variable alterations in the volume of current flowing through the line.

In ordinary wet weather the volume of current that manages to remain in the conductor is sufficiently great to give a working margin to a neutral relay that not only overrides the inconsistency of the current due to "cross-fire," but permits of compensating readjustments of the retractile spring by the operator. In extremely wet and foggy weather, however, the value of the legitimate working current is often but little greater than that due to inductance, leakage and cross fire effects. Under these conditions the alterations in the value of the working current is so rapid and tremulous in character that no temporary readjustment of the spring will meet the requirement, for the reason, previously stated, that the tension is constant while the magnetic attraction varies in strength.

A polarized relay is not affected to so great an extent by these conditions. If the lever of such an instrument is being repelled or attracted in the direction of one of its contact points by the action of, say, a very feeble current, a sudden increment in the volume of the latter will not alter its movement. It will simply be energized a little greater and continue its journey.

patent), March 1; Definitions of Electrical Terms—Unabridged, March 18 to April 16, Inc., June 1 to July 16, Inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, Inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, Inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power From the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16; The Dynamo—Series Shunt and Compound Wound, Feb. 1-16, March 1; The Storage Battery, March 16-April 1-16-May 1.]

Book Notice.

"The Land of To-Morrow" is the title of a new volume by Major J. Orton Kerbey, the well-known old-time telegrapher. The book embraces over four hundred pages of text, has more than fifty illustrations, is printed on a finely finished paper, and is bound in cloth, with a decorative cover. Major Kerbey, who is a resident of Washington, a former newspaper man and ex-United States Consul at Para, Brazil, the great rubber shipping port of South America, who was instructed by his government to study and report on the india rubber industry in that part of the world, was a member of an exploring party to the headquarters of the Amazon, the trip being undertaken with a view of making a search for rubber. The newspaper training of the author is everywhere apparent throughout the pages of the book, for the story told by him is direct and lucid in style, giving information incident to the long journey, with its accompanying wealth of adventure, and finally of the object attained, in a manner calculated to hold the close attention of the reader from cover to cover.

The book has especial value, inasmuch as it throws so much light and information on the important industry of rubber gathering and of the need of conservation and cultivation of the product to insure a future supply. To the rubber importer, the rubber trade, as well as to the general reader, who loves a good story as well as an interesting book of travel, the volume possesses worth differing only in degree. Telegraphers who remember Major Kerbey as belonging to the fraternity, and who have read his previous books, "The Boy Spy" and "On the War Path," etc., will welcome this additional contribution of his to a literature which has found a wide and enjoyable reading.

The price of the book is \$1.50. Address orders to J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay,

The testimony of progressive operators is that TELEGRAPH AGE is so thoroughly comprehensive in character as to make it absolutely indispensable to those who would keep informed. Its technical articles are of high practical value. Write for a free sample copy.

Personal Mention.

Mr. J. E. Gobiell, of Ottawa, Ont., inspector of the Dominion government telegraph lines, is in Alaska on a tour of inspection.

Mr. Orrin S. Wood, the veteran first operator in the world, and Mr. Andrew Carnegie, whose early experiences were identified with the telegraph, met for the first time on May 15, and a pleasant hour was passed in exchanging reminiscences relating to the telegraph in its early days.

Major J. Orton Kerbey, of Washington, an old time telegrapher, is about to set off for Rio with the American party to attend the forthcoming Pan-American Congress as a newspaper man at an age which Dr. Osler thinks the turning point for inactivity. If he narrates the proceedings of the Congress as readily as he tells his story of "The Land of To-morrow," recently brought out by him, and mentioned elsewhere in this issue, his letters should make "mighty interestin' readin'."

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Col. R. C. Clowry, president and general manager of the company, who has been in Europe for the past month, sails upon his return trip June 1, on the steamer Celtic, from Liverpool.

The apparatus of the Barclay printing telegraph system has been removed to the Broadway end of the seventh floor. Here in ample space are assembled the various receiving apparatus as well as the perforators on which are prepared the messages for transmission. This department is an exceedingly busy one. The four Barclay printers working between New York and Chicago now carry the entire traffic exchange between these two points, and the rapidity with which the vast volume of business is handled conclusively sets at rest all doubts as to the entire practical utility of this system. It is thought that Barclay printers will soon be installed on other busy circuits. The inventor of the system, John C. Barclay, the assistant general manager and electrical engineer of the company, is constantly improving the operation of his printer by reducing the number of and simplifying the working parts. The next installation of this system will be between New York and Buffalo, and Buffalo and Chicago.

Mr. William Finn, of the electrical engineer's department, has recently been at Rushville, Ind., experimenting with the single phase alternating system located at that point, which has been interfering with the working of telegraph and telephone wires, paralleling the trolley lines in that vicinity. Mr. Finn has met with much success in solving this vexatious problem.

Mr. William J. Lloyd, assistant superintendent of the company at Chicago, will sail from New York for Europe on June 30, to be absent about three months.

Mr. G. H. Fearons, the general attorney of the

company, accompanied by his wife, will spend a few weeks in Europe this summer, his departure dating from June 20.

Mr. Jacob Levin, general superintendent of the southern division, with headquarters at Atlanta, Ga., accompanied by Superintendent B. F. Dillon and wife, of Jacksonville, Fla., were recent visitors at Key West, Fla., and Havana, Cuba.

Mr. Charles Corbett, superintendent at Cleveland, O., was in New York on May 16, coming east for the purpose of seeing Mrs. Corbett and their five children off for Europe, who go abroad to be absent about two years.

Mr. John P. Altberger, superintendent at Philadelphia, was married on Monday, May 21, to Mrs. Maud E. Rowles, of that city. Mr. and Mrs. Altberger have gone to Europe on their wedding trip, and will be absent about a month.

Brunswick, Ga., will soon have a new up-to-date telegraph main office, the equipment for which having already arrived at that point.

The stockholders of the East Tennessee Telegraph Company met at Nashville, on May 9, and elected the following board of directors: R. C. Clowry, J. C. Barclay, J. B. Van Every and G. W. E. Atkins, New York; J. Levin, Atlanta, and J. R. Terhune and A. H. Stewart, Nashville.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

Among the recent executive office visitors were Mr. E. J. Nally, general superintendent, Chicago.

Mr. E. C. Bradley, vice-president of the company, has returned from San Francisco, whither he hurriedly went at the time of the great disaster.

Mr. S. F. Jones, assistant electrical engineer of the company, has recently returned from a business trip extending through New York state.

Mrs. Julia E. Larish, the wife of Joseph W. Larish, of the electrical department, died May 13, in New York, after a lingering illness. The interment was at Buffalo, N. Y., the native place of the deceased.

A new main office of the company at Atlanta, Ga., will soon be established at the corner of Broad and Alabama streets, where finer and more commodious quarters will be secured, rendered necessary by the increasing business.

Mr. George F. Fagan, chief clerk in the general manager's office, is still confined to his home by illness, yet his friends hope for his early return to duty.

The main office at Albany, N. Y., has been renovated and brought up-to-date. The operating department has been moved to the second floor of the building, where there is found every modern equipment and requirement that goes to make up a first class operating room.

Mr. J. D. Prosser, manager of the office at Washington, D. C., recently spent a number of days in New York, renewing acquaintances with a numerous circle of old friends.

Obituary.

W. E. Hogan, aged twenty-eight years, a telegraph operator, died at Williamsport, Pa., May 5.

W. T. Bouchelle, assistant to Charles F. Cutler, president of the New York Telephone Company, died at his home in Greenwich, Conn., on May 19.

W. P. Frost, aged fifty-nine years, superintendent of construction, and for many years past employed in the telephone service, died at Hartford, Conn., on May 16.

Mark Fleming, aged twenty-eight years, a telegraph operator out of work since the earthquake, who has been living at Camp Inch on Adams Point, San Francisco, Cal., committed suicide May 10.

Charles U. Keep, aged forty-five years, employed by The Associated Press as telegraph operator for fifteen years up to within a short time of his death, died at Colorado Springs, Colo., May 18 after a long illness.

Charles D. Livermore, aged sixty-five years, chief operator of the Western Union Telegraph Company at Portland, Me., died on May 15. For about forty years he was manager of the Portland office, which he relinquished on account of ill health three years ago. He learned telegraphy at Hallowell, under the tuition of his father, who was one of the best known telegraphers in New England. During the Civil War he was a paymaster in the navy. His long held managership gained for the Portland office an enviable name and record. It used to be said that Mr. Livermore, while a strict disciplinarian, was more of a father to his men than their master, because of his kindly manner and disposition to aid them. He leaves a daughter.

The Railroad.

The New York meeting of the Railway Signal Association was held at the Grand Union Hotel, May 8. The revised constitution presented at the Chicago meeting on March 19, and corrected in certain paragraphs, was adopted. A number of interesting papers were also read, including "The Upward Indication of the Semaphore Arm," by L. R. Clausen, signal engineer, Chicago, Milwaukee and St. Paul Railway; "Electric Locking at Electric Interlocking Plants," W. H. Arkenburgh, chief draughtsman Union Pacific Railroad; "Substitution of Track Circuits for Detector Bars," H. W. Lewis, supervisor of signals Lehigh Valley Railroad; "Alternating-Current Track Circuits in the New York Subway," J. M. Waldron, signal engineer Interborough Rapid Transit Company.

The convention of Railway Telegraph Superintendents, which meets at Denver, Colo., on Wednesday, Thursday, Friday and Saturday, June 20, 21, 22 and 23, will mark the "silver" anniversary of this association, for the assemblage will be the twenty-fifth in the series.

Headquarters will be established at the Adams House, that city, and that excellent hostelry, one of the best appointed hotels in the west, will extend a grateful hospitality during the four days of the convention to delegates and all who attend in whatever capacity. Suitable room will be provided for the display of exhibits. Reservations for hotel accommodations should be made direct with the manager. Aside from the business programme, which will include the reading of a number of important papers, the entertainment committee, consisting of Messrs. C. A. Parker, E. E. McClintock, J. M. Walker and J. Munday, have planned a scheme of social entertainment to cover the hours of leisure.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. M. E. Colegrove has been appointed manager at Delhi, N. Y., vice Mr. L. H. Albee, made manager at Walton, N. Y.

Mr. F. D. Lewis, formerly employed at the Lehigh Valley depot, Cortland, N. Y., has been appointed manager of the local office at that point, vice T. P. Lovell, resigned.

Mr. Charles H. Stevens has been appointed chief operator at Portland, Me., vice Mr. Harry H. White, promoted to be manager, and Mr. James F. Madigan has been made night chief operator.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. M. H. Donahue, of Olean, has been appointed manager at Geneva, N. Y.

Mr. J. W. Booth, formerly traffic chief of the North American Telegraph Company at the board of trade office, Duluth, Minn., has been appointed manager of the same interests at La Crosse, Wis., vice Mr. L. A. Seaman.

Telegraph Patents.

The following patents have expired:

Patent No. 402,828, for a circuit-closer for railway car telegraphs, issued to G. L. Hopkins, of Manchester, N. H.

Patent No. 402,717, for a telegraph instrument, issued to C. G. Burke, of Richmond Hill, N. Y.

Patent No. 403,472, for printing telegraphy, held by Z. P. Hotchkiss, of Oak Park, Ill.

Patent No. 403,258, for vibratory telegraphy, taken out by S. D. Field, of Stockbridge, Mass.

Patent No. 403,291, for an exchange system for telegraphs, secured by J. H. Robertson, of Rutherford, N. J.

Patent No. 403,292, for a system of combined telephony and telegraphy, obtained by J. H. Robertson, of Rutherford, N. J.

The Cable.

Cables interrupted May 28, 1906:
 Tangier, "via Cadiz" Feb. 18, 1906.
 Venezuela Jan. 12, 1906.
 Messages may be mailed from Curacao (see Porto Plata) or Trinidad.
 French Guiana (Paramaribo-Cayenne)
 Mail from Paramaribo. Apr. 20, 1906.
 Pinheiro, "via Cayenne" Aug. 13, 1902.
 Porto Plata, "via Cape Hayti" May 15, 1906
 Messages for Porto Plata, San Domingo and Curacao (see Venezuela) may be forwarded by vessel from Hayti to Porto Plata at ordinary rates or "via Key West - Guadeloupe," at higher rates.

Orders have been issued by Gen. James Allen, the chief signal officer of the army, for the installation of the duplex system on the Alaskan cables. The commercial business of the cables has become so heavy that even by working night and day, the operators are not able to handle all the despatches. In April, the receipts from the business of the Alaskan telegraph and cables lines was \$18,500, and it is estimated that if the government had paid for official cable despatches the income of the line would have averaged at least \$1,000 a day. An appropriation is now pending in Congress for the construction of feeders to the main Alaskan cable, which will connect with Ketchikan, Wrangell, and Prince Edward's Island. As the country these branches would reach is rich in fisheries and the seat of many canneries, the War Department's view is that the business of the cables will be greatly increased. Many changes in the telegraph lines in Alaska are also in contemplation by the signal corps. The lines reaching north from Valdez to Eagle City, and extending to the western coast of Alaska, are very crooked, as the country is so rough that it was necessary to follow the streams with the telegraph system. Now, it is the purpose of the signal corps to straighten out these lines and shorten them wherever possible. In this manner, it is believed, the telegraph service will be improved, and the lines made capable of yielding greater income.

The fact that Germany obtained at the recent conference at Algeciras the right to land a cable in Morocco recalls the existence of four cables which connect Europe with Morocco, which latter country is said, with the exception of two short land-lines proceeding from Ceuta, to be entirely without telegraphic facilities at the present time. One of the four cables is British property and one is French, while the other two are Spanish; the latter unite Algeciras and Ceuta and Almeria and Melilla, respectively, and are declared to be only of local importance. The cable of the Eastern

Telegraph Company was laid between Gibraltar and Tangier in 1887, the Spanish cables were established in 1891, and the French cable between Oran, Algeria and Tangier was laid in 1901. It is thought in German circles that it will not be necessary to wait very long before the proposed German cable is put in hand. A cable which was first brought into use at the end of 1896, already proceeds from Emden in the North Sea to the Spanish port of Vigo, the line having been laid for the purpose of securing connection with the English submarine cables on the Spanish coast. The Emden-Vigo cable is now in the hands of the German Atlantic Telegraph Company, and no difficulties are anticipated in extending it to Tangier, while at the same time the idea of making extensions to the southern parts of Morocco at a later date is also entertained in Germany.

Legal.

That a telegraph company must return moneys paid to its messenger boys on fraudulent or forged slips was decided by Justice Greenbaum in the Supreme Court, New York, May 15, in the suit brought by a New York concern to recover from one of the telegraph companies the sum of \$592 thus paid out.

The plaintiff corporation had for several years been in the habit of sending despatches through the defendant company, the manner in which messages were sent being to ring up the telegraph company for a messenger, to whom, when he called on the plaintiff, the telegrams were delivered.

The telegraph company upon the following day would send its messenger with as many memorandum slips or bills as represented the number of telegrams sent on the previous day, each slip containing a memorandum of the name of the sender, the place to which the message was forwarded, and the charge for the service. The plaintiff's assistant cashier paid the messenger, who left these slips with him as vouchers.

It appeared that a large number of fraudulent slips were presented for collection and paid by the assistant cashier, he believing them to be genuine.

"The moneys thus fraudulently collected," said Justice Greenbaum, "form the basis of this action. Although no proof was presented as to the authorship of the forged slips, it is apparent that they were forged by two of the defendant's messengers, who were employed to receive the telegrams and collect the amounts called for on the slips, which were written out by the manager of the defendant's office."

A well-known telegrapher in New Zealand, a subscriber to TELEGRAPH AGE, in a recent letter had this to say: "I like your articles on 'The Need of Greater Efficiency in the Telegraph Service.' They might have been written for our department without altering a line. We are at present appointing people who are not technically qualified to fill positions requiring technical knowledge, just because there are no men competent to fill them."

Business Notices.

The sales office of the Electric Storage Battery Company, in San Francisco, destroyed in the recent disaster, has been transferred to 525 Thirteenth street, Oakland, from which point all business connected with the Pacific Coast territory will be handled.

Mr. S. B. Lefley, manufacturer of the Lefley telegraph key, at Columbia, Pa., a device which has acquired an excellent reputation within fraternity circles, announces an important reduction in its cost. Thus, the leg pattern has been lowered from \$4 to \$3.50, and the legless pattern from \$4.50 to \$4. This is a substantial decrease, and should serve to further attract the favorable consideration of operators for whom the Lefley key has proved a valuable acquisition.

In these days of 100,000-KW. power stations, the notion is apt to obtain that the old familiar primary battery has been relegated to the high school laboratory and the ringing of doorbells. However, primary batteries are still used in immense quantities, as for the operation of railroad signals, the sparking of gasoline engines and for places where a limited amount of electrical energy is needed constantly and uniformly. The batteries now being supplied are an improvement over the old cells and their manufacture and design have been reduced to scientific perfection. We have before us a pamphlet entitled "Edison Primary Batteries," published by the Edison Manufacturing Company, of Orange, N. J. This pamphlet describes Edison's improvement of the Lalande caustic potash cell, which, as the pamphlet shows by quotation from Prof. Carhart, "Has a capacity of work per unit weight greater than any other either primary or secondary." It is stated that the energy of the Edison cell applied through a perfect motor would raise the cell 16.17 miles. The improvement made by Edison consists in forming the copper oxide depolarizer into firm briquettes which reduces both the internal resistance of the cell and the tendency to polarize, at the same time making the renewal of the cell much more convenient. The cost of electrical energy from these cells for some purposes would not be excessive, as, for instance, a 600-ampere hour renewal comprising all the perishable parts of the cell costs only \$2.52, which is less than $\frac{1}{2}$ cent per ampere hour. It is stated that this cell gives rise to no fumes, that the liquid does not corrode machinery, that there is no creeping of salts and that the cells do not freeze in ordinary cold weather.

Municipal Electricians.

The convention city this year of the International Association of Municipal Electricians, as previously announced, will be New Haven, Conn., the dates being August 15, 16 and 17. A number of interesting papers, discussing timely topics, the titles of which were given in our issue

of May 1, will be presented for reading and discussion. A full attendance of members appears to be assured.

The advance census bulletin makes the following report upon the fire alarm systems and the police patrol systems of this country:

Electric fire alarm systems were installed as early as 1852, and by 1902 there were 764 such systems in operation. There are, however, a great many communities which still retain the inadequate method of notifying the people of the occurrence of a fire by the ringing of a bell or by the blowing of a steam whistle, the number of strokes or blasts indicating roughly the location of the fire. The fire alarm systems were distributed through forty-eight states and territories, although they were found chiefly in the older and more densely populated sections. The largest number, one hundred and six, was reported for Massachusetts and the next largest, seventy, for New York. The practice of putting the fire alarm wires underground has increased rapidly during late years, and more than one-fourth of the 39,635 miles of such wire was underground in 1902. There were 37,832 signaling and annunciating boxes and 1,900 special telephones for use in connection with the fire alarm service. During the year 1902, 85,070 fire alarms were turned in through these boxes and telephones. Of these alarms, 12,794 were credited to New York; 9,491 to Massachusetts, and 9,027 to Illinois.

The utilization of the telegraph as an aid in the detection and suppression of crime, and also in connection with other duties falling to the protectors of the peace, was resorted to at a rather early date by the police departments in various large cities. The combination of the telegraph and telephone as an auxiliary to the police force was first introduced in 1880. In 1902 the police patrol systems were distributed in thirty-two states and the District of Columbia, most of the systems being located in the states with the greatest number of large cities. Massachusetts is credited with the largest number, 28, and New York ranked second, with 14. There were, in 1902, 148 police patrol systems, with 26,350 miles of wire. The signaling boxes numbered 9,476; and the telephoning boxes, 1,170. Over these instruments 40,626,505 police calls were received or sent. This gives an average, per box or station, of 3,816 messages during the year, or a daily average of more than 10 calls. The use of the telephone predominated, the number of telephonic messages being 23,393,812, as compared with 17,232,693 of all other kinds. In the rural districts the use of the telephone has greatly lessened the labor of sheriffs and constables in connection with the suppression of the "tramp nuisance."

TELEGRAPH AGE will furnish operators with just the kind of practical information they require.

The Last Link of All-American Pacific Cable.

BY LEWIS G. MARTIN*, IN THE ELECTRICAL REVIEW.

A trip which includes a tour of the world is in itself sufficient to excite considerable curiosity and expectation, but, coupled with the knowledge of work to be done among, and with the assistance, of people to whom such work is entirely new and novel, it becomes positively fascinating.

This was how matters stood when, on August 4, 1905, the writer left New York for Shanghai, China, to lay an underground cable for the Commercial Pacific Cable Company, to connect its Manila-Shanghai submarine cable with the cable office in the international settlement of Shanghai. Information concerning the route to be followed was meagre, but great faith (established by previous observation) in the ingenuity of the Chinese quieted all misgivings regarding difficulties likely to be encountered, and subsequent events proved that this confidence was not misplaced.

After an interesting trip through Canada down the Pacific Coast to San Francisco and a record trip across the Pacific in the steamship "Siberia," touching at Honolulu, Midway Islands, Yokohama, Kobe and Nagasaki, Shanghai was reached on September 8. The call at Midway Islands was made in order to allow Mr. F. H. Harriman, the railroad magnate, who was on his way to Japan, to receive and send despatches, and an opportunity was given the writer to visit the cable station there.

The island on which the cables are landed is one and three-quarter miles long and at its broadest point seven-eighths of a mile across. It is quite flat and a sandy waste. A more cheerless and lonesome spot cannot be imagined (and the islands were seen at their best on our visit), but all that possibly could be done for the comfort of the cable staff has been done by the Commercial Pacific Cable Company. The offices and quarters are substantial buildings of steel and concrete construction and fitted with all modern conveniences, including acetylene gas for lighting purposes, and are most comfortably furnished. A detachment of twenty United States marines, commanded by a lieutenant, is quartered on the island, and with the cable staff, numbering about seventeen, forms the population of the islands. Good fishing, shooting and boating are to be had

* Mr. Lewis George Martin, the writer of this article, has had an extended and diversified experience in telegraph and cable service. Born at Woolwich, England, August 27, 1869, he first became connected with the French Atlantic Cable Company at London, on June 16, 1882, and later at Brest, France. Subsequently he became identified with the Halifax and Bermudas Cable Company; was a member of the Bermuda-Jamaica cable expedition in January, 1898, and had charge of traffic arrangements at Jamaica during the Spanish-American war. Since 1899 he has been with the Okonite Company, Ltd., of New York, in whose employ he has traveled the world over laying cables of all kinds manufactured by that company.

and are the popular forms of recreation and sport.

The principal work to be done at Shanghai was to lay a two-inch galvanized wrought-iron pipe, inserting cast-iron junction boxes every eighth of a mile, and to place therein a four-conductor cable. The cable was manufactured by the Okonite Company, Limited, of New York, in accordance with specifications drawn by the Commercial Pacific Cable Company, the prime features of which were: weight of conductor, 116 pounds per mile; thickness of wall of insulation, three-thirty-seconds-inch, each conductor taped and leaded, and then leaded over all; insulation resistance to be not less than 1,700 megohms per statute mile at sixty degrees Fahrenheit, and conductor resistance not to exceed eight ohms per statute mile at the same temperature.

Some novel features presented themselves in connection with the work, as 1.8 miles of the line had to be laid in the international settlement of Shanghai, ten miles along the embankment of the Shanghai-Woosung forts section of the Shanghai-Nanking Railroad, and 2.65 miles in the open country from Woosung forts to opposite the Chinese city of Pao-Shan, where the submarine cable is landed.

There was nothing out of the ordinary in the way of or the facilities for accomplishing the laying of the pipe line and cable through the international settlement. Means of transportation were plentiful and good, and the coolies, by the time this end of the line was reached, were well broken in.

Along the line of the railroad and in the open country, however, things were not quite so easy. The only two ways of getting material to the railroad embankment were by means of narrow creeks which cross the railroad at more or less frequent intervals, or by the railroad itself. The creeks were all right for the lighter material, such as lengths of pipe, but of no use for heavier material, such as reels of cable, owing to shallow water and want of facilities for hoisting, and the impossibility of rolling the reels along the embankment foot-path, which was in poor condition and only three feet wide. It was necessary, then, to enlist the sympathy of the railroad authorities who, at great inconvenience to themselves (they were working night and day on their Shanghai-Nanking extension), lent us at night time, after the trains had stopped running, their steam crane and locomotive and trucks with which to place the reels.

It was a sight not soon to be forgotten to see the villagers along the line of the railroad turn out en masse and view with astonishment and wonder what must have been to them the mysterious doings of the foreign devils. Numerous questions were asked of the Chinese foreman and coolies, and undoubtedly many strange replies given, for the whole proceeding was as much an enigma to those questioned as to the questioners.

In the open country the reels of cable were rolled over indifferently made roads and foot-paths to their respective locations, the coolies re-

garding this as fine exercise and sport.

The contract for the digging of the trench, connecting up the pipe and boxes, placing in position of same and refilling of trench, was awarded to a Chinese contractor, who proved to be reliable and trustworthy. After going over in detail with him the work to be done, considerable surprise was caused by his announcing that he would join up the pipe in one-eighth of a mile sections on the opposite side of the track or street from which the trench was to be dug, and then carry it bodily across the track or street and lower it into the trench; but all fears were allayed when he said he intended to have between two hundred and three hundred coolies on the job and would put a sufficient number on the pipe so that no harm could arise. As a matter of fact, the vast majority of the pipe was laid in this way and in an exceedingly satisfactory manner.

The Chinese coolies proved themselves to be, under proper supervision, admirable workmen, quick to learn and appreciate, not afraid of hard work, long hours, and good natured and contented. There were at one time 266 coolies on the job, and the record day was 4,000 feet of completed work, not bad when one considers that the digging implements consisted of an adze-shaped hoe, a one-prong fork, ordinary field rakes and toy spades; and the vast majority of the men had either only the one or the other of these.

Several bridges had to be crossed and no difficulty was experienced in making the contractor understand the method to be adopted or in having the instructions faithfully carried out.

The cable was pulled in at the rate of one-half mile per day and in one-quarter mile lengths, much time, however, being lost along the line of railroad in "moving up," owing to the unevenness of the foot-path and the necessity of caution on account of passing trains.

When completed the cable tested electrically perfect, the results showing an insulation resistance of 6,278.5 megohms per statute mile at sixty degrees Fahrenheit and conductor resistance of 7.158 ohms per statute mile at temperature.

From Shanghai to Woosung, a distance of about ten miles, two two-core armored cables were laid in the same trench as the pipe line for the German-Dutch Submarine Cable Company, and from the Shanghai office of the Imperial Chinese Telegraphs to the railroad, a distance of about two miles, a six-conductor lead-covered and steel-taped cable was laid, also in the same trench, for the Imperial Chinese telegraph administration. It was the writer's privilege to meet Mr. Chow Wan Pang, acting general manager of the latter, a gentleman educated at Harvard, an energetic worker and fully alive to the needs of an up-to-date telegraph service.

To Mr. F. N. Dresing, chief superintendent of the administration, I am indebted for many courtesies.

Along the railroad the German-Dutch cables were laid out in true submarine style from the end of a truck hauled by a locomotive, much to the amusement of the coolies engaged and the surprise of villagers en route.

On December 18 work had to be suspended, owing to anti-foreign riots in Shanghai, but was resumed again on December 21, when it was quite evident there was no further cause for alarm. The cause of the trouble was a dispute in the mixed court some days previous between the British assessor and Chinese magistrate over the disposition of a Chinese lady and some girls she was accused of having kidnapped, which led to a hand-to-hand fight between the European and Chinese court attendants, in which the latter were worsted.

During the past six months cables have been laid connecting Yap, in the Caroline Islands, and Manila, in the Philippines, with Shanghai, making it, with its numerous cables running north and south along the coast of China and across to Japan, an even more important telegraphic centre in the Far East. Two cable steamers are stationed there, the Pacific and Stor Nordiske, which keep in repair all the cables in Chinese waters and vicinity. These steamers belong to the Great Northern Telegraph Company, to whose officers, particularly W. Schonau, the company's chief engineer in the Far East, the writer is indebted for valuable advice and assistance.

On December 30 the homeward journey was commenced, and short visits to Hong Kong, Singapore, Penang, Colombo, Aden, Suez, Port Said, Naples, Genoa, Paris, London and other parts of England and Ireland completed a trip full of interest from first to last.

American Institute of Electrical Engineers' Election.

At the annual meeting of the American Institute of Electrical Engineers, held in New York, May 15, the election of officers resulted as follows: Dr. Samuel Sheldon, Brooklyn, president; A. H. Armstrong, Schenectady, N. Y.; H. H. Humphrey, St. Louis, and F. G. Baum, San Francisco, vice-presidents; Paul M. Lincoln, Pittsburg; Paul Spencer, Philadelphia; John J. Carty, New York, and A. M. Schoen, Atlanta, managers; George A. Hamilton, New York, treasurer; Ralph W. Pope, New York, secretary.

The report of the board of directors for the fiscal year ending April 30, 1906, showed total membership of 3,870. The total assets of the Institute were \$156,472.27. The total liabilities were \$101,160.33, leaving a surplus of \$55,311.94.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

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NEW YORK, JUNE 1, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientage. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

In the gift of sixty-five Monarch visible typewriters, designed for those of its operating staff at San Francisco, who lost their machines in the recent disaster by earthquake and fire, the Western Union Telegraph Company performed a generous and graceful act in behalf of loyal and deserving employees, who will doubtless heartily appreciate and welcome the opportune benefaction, for a typewriter is an indispensable working tool of an operator's outfit.

The International Postal Congress at Rome, of which Edward Rosewater, editor of the Omaha Bee, and a former telegrapher, is a representative of the United States, comprises a highly intelligent body of representative men, assembled from all countries, and gives promise of accomplishing substantial improvements in the mail service of

the world. Already several propositions providing greater facilities in this respect have been adopted. There is scarcely a more important department of international public service than that of the mails, and every effort looking to its advancement, its more efficient and economical administration, should be welcome.

By a decree which recently went into effect it appears that the French government has transferred the control of the postal, telegraph and telephone in that country from the department of the minister of commerce and industry to that of the minister of public works, a change, it is said, that will insure at least greater economy in management. Economy is all very well, but efficiency should be the first consideration. It matters little which department of the government administers the telegraph and telephone, unless the taint of inefficient management which characterizes all European countries in the direction of these important public utilities be removed, for otherwise the transfer is simply a case of "jumping from the frying pan into the fire."

It has not been the practice of the English postoffice authorities to encourage the spirit of invention on the part of the members of its telegraph department, and consequently the taking out of patents relative to telegraph improvements cannot be said to have reached stimulative proportions in that country. It might be inferred, however, from the following, taken from the London Electrician, that the government policy has undergone a change in this respect:

In the House of Commons on April 30, Mr. Steadman asked the Postmaster-General whether he would explain why, in view of the amount of money expended at the general factory, Mount Pleasant, in experimenting on electrical condensers and other work, and of the fact that the whole of the work was done at the factory and by the staff generally, some seven patents had been taken out by an officer of the factory on the results of the experiments done, and was he aware that the patents had been let on royalty to a foreign firm who were now manufacturing condensers on the results obtained at Mount Pleasant. Mr. Sidney Buxton, in reply, stated that the officer in question had been allowed to take out patents on conditions which amply protected the interests of the telegraph and other government departments. He thought it was to the public advantage that the inventive faculty of public servants should be encouraged.

Telegraph Conditions.

Conditions, financial and otherwise, that confront the future welfare of the telegraph in this country, appear to involve economic problems in administration of a character such as to place a severe tax on resource, skill and ingenuity in meeting the exigencies of the situation. For the steadily growing cost of maintenance observed from year to year, to which the companies are subjected, constitutes a serious menace to prosperity, and necessarily will increase the difficulties

that face executive management in making both ends meet. The question becomes a natural one, When will a limit to excessive expenditure be reached?

There are several impelling causes against which the telegraph is called upon to combat. In the first place there is the telephone, the competitive pressure of which, particularly in local fields, is felt more and more each successive year. Then there is the exorbitant taxation to which the telegraph is subjected, in amount an appalling burden, the imposition of which by many towns, cities, counties and states through which telegraph wires pass and offices are established, is dictated apparently more frequently by the spirit of opposition to corporate interests rather than by any measure of equity. Still another form of assault upon the telegraph is that manifested in suits for damages, oftentimes having their origin in causes more imaginary than real, and brought in courts all over the land, and which, of course, have to be met and defended.

These adverse instances recited are sufficient to show to what an extent telegraph corporations are publicly regarded as objects of financial attack; and apparently nothing can be done to stop these raids.

In view of such untoward circumstances it will readily be seen that close economy in telegraphic management becomes an imperative necessity. Among other things, this means probably that wages of employees cannot be advanced, except, possibly, in slight measure, beyond the present schedules, even though the higher cost of living would seem to make increased pay but conferring an act of justice to the great army of workers who serve the telegraph interests so well. The undercurrent voice for larger remuneration, so frequently heard, enforced by the argument of general prosperity, unfortunately does not fit the exigencies of this particular case. For the telegraph, indispensable as it is as a contributory agent, can yet hardly be said to be numbered in the list of great corporations that is feeling the buoyancy of current financial success. Nor is the further argument permissible that if a general raise of salary is not warranted under the present margins of profit accruing to the telegraph companies, a solution of the problem would be reached through an increase of telegraph rates.

The question is, Would it? While the rates are low, perhaps too low, especially when considered in comparison with the tolls demanded abroad, even when under government control, the tendency in this country in response to popular demand, is toward still lower rates, and any attempt to increase charges on the part of the telegraph companies would no doubt be disastrous in its results.

Mr. James N. Worl, a forty-niner of the telegraph, and who is probably one of the best preserved old timers in the country, makes some

pertinent observations regarding the Old Time Telegraphers' and Historical Association, which are worthy of consideration. Mr. Worl believes that the membership of the association should be separated into divisions. The first division, according to his idea, should include all members of the association who began their telegraph service between 1844 and 1870, embracing a period of the first twenty-six years of the existence and history of the telegraph. This, he says, would accord with the original intention of the founders of the association in 1881, which had this very purpose expressly in view, and which he thinks ought to be preserved. The forty-niners of the telegraph and those who entered the service between the years 1850 and 1870 have little in common with the younger members of the profession, and naturally look with disfavor upon the opening of the doors of the association to those who have been in telegraph service only twenty-five or thirty years. The first division, under Mr. Worl's plan, would therefore form a distinct circle of the genuine veteran telegraphers of the country, an arrangement which, in our opinion, might well be carried out.

It is further proposed that there be a second division, to which membership shall be limited to those who have entered the service since 1870 or as provided for by the constitution. Naturally, as time passes, the members of the first division will pass away, and it will remain only as a memory, while the association will look to its future maintenance through the growth of the second and subsequent divisions.

Mr. Worl's observations appear to be based upon the original idea governing the organization of the Old Time Telegraphers' Association, and as such are commended for further and general consideration. The genuine old timers are, no doubt, clearly entitled to their distinctive division.

Magnetic Survey of the Pacific Ocean.

Mr. L. A. Bauer, in a contribution to "Terrestrial Magnetism and Atmospheric Electricity," says that the first cruise of the yacht *Galilee*, engaged in the magnetic survey, just completed, of the Pacific ocean, under the auspices of the Carnegie Institution of Washington, covered the following route: San Francisco, Hawaiian Islands, Fanning Island, Magnetic Equator, Hawaiian Islands, San Diego. Already most interesting results have been obtained both with reference to the accuracy of the present magnetic charts and as to the accuracy with which the magnetic elements can be determined at sea. These results will be embodied in an early publication. Although the *Galilee* is not entirely non-magnetic, she has smaller magnetic constants than any vessel thus far engaged in magnetic work.

Orders for books on telegraphy, wireless telegraphy, telephony, all electrical subjects, and for cable codes, will be filled by TELEGRAPH AGE on the day of receipt

The Murray Automatic Printing Telegraph System in Russia.

The Murray automatic page-printing telegraph system has been installed between St. Petersburg and Moscow. The inventor Mr. Donald Murray, who has recently returned to London from Russia, states that some successful trials of this system have been carried out on long Russian telegraph lines.

On February 23, 1906, a telegraphic loop line was made up as follows: St. Petersburg-Moscow-Smolensk-Vitebsk-St. Petersburg. The loop was triangular in shape, and the length of the line was 1,106 miles (1,770 kilometres). The wire was 5 mm. iron (about 600 lbs., 8.88 ohms per mile), and there were two Wheatstone repeating stations, one at Moscow and one at Vitebsk. The Wheatstone automatic system (using the Morse alphabet) got fifty-five words per minute perfectly, but failed at sixty words per minute. The Murray system (using the Baudot alphabet), under exactly the same conditions, got ninety words per minute perfectly, but failed at one hundred words per minute.

On February 24, the following loop was made up: St. Petersburg-Yaroslavl-Kazan-Moscow-St. Petersburg, a distance of 1,926 miles (3,082 kilometres), 5 mm. iron wire (600 lb. per mile), with repeating stations at Yaroslavl, Kazan and Moscow. The speeds obtained were indefinite, as one of the sections was not in good condition. The Wheatstone got about thirty-five and forty words a minute, and at times a little higher. The Murray system got fifty-six words per minute, and ten messages were transmitted and printed. They were found to contain two wrong letters, a remarkably good result considering the condition of part of the line. This is the first time on record that a printing telegraph has worked over such a distance as 1,900 miles, even of copper wire, and in this case the wire was iron.

On February 25, a trial was made of a loop without a repeater from St. Petersburg to Moscow and back, 800 miles (1,280 kilometres) 5 mm. iron wire, about 7,100 ohms in the line and 800 ohms in the receiving relay, battery 140 volts and arriving current 13 milliamperes. The maximum speed of the Wheatstone (Morse' alphabet) was twenty-five words per minute. The Murray system (Baudot alphabet) under exactly the same conditions got sixty-three words per minute easily and perfectly. Ten messages were transmitted and printed without an error.

On March 9, a trial of the Murray system was made from Berlin to St. Petersburg direct without a repeater. The length of this line is about 1,080 miles (1,728 kilometres). From St. Petersburg to Eydtkuhnen, on the German frontier, the line consists of 600 miles of 5 mm. iron wire, and from Eydtkuhnen to Berlin 480 miles of 3 mm. copper wire (4.37 ohms per mile). The total resistance of

the line was 7,425 ohms. The trial was from 8.30 to 9.30 a. m., Berlin time. Berlin tested the wire, and reported that it was "not clean" (nicht rein), and wet snow was falling in St. Petersburg, where there was a thaw. After a few experiments a speed of seventy words per minute was reached perfectly with the Murray system on this line, the German typewriter sentence containing all the letters of the alphabet, "Kaufen Sie jede Woche vier gute bequeme Pelze xy 1234567890" being transmitted and received over and over again perfectly for about ten minutes. Traffic requirements did not permit of further experiments, but it is probable that by the use of a shunted condenser and increased battery power the speed might have been raised up to eighty or ninety words per minute. The highly favorable results obtained with the Murray system during these trials are explained by the inventor as being chiefly due to the employment of the Baudot alphabet, which is shorter than the Morse in the ratio of five to eight. It may also be mentioned that the inductive interference from neighboring wires was very severe on these long lines, and was an important factor in limiting the speeds obtained. The Wheatstone apparatus was well adjusted by skillful mechanics, and the results were as good as could be expected from it under the conditions. Special artifices, such as shunted condensers, were not employed.

Mr. Murray adds that whatever truth there may be in the newspaper reports about other departments of the Russian Government, the Russian telegraph service appears to be efficiently managed. Both in St. Petersburg and Moscow he found the head telegraph offices up-to-date and well equipped and arranged, and the officials hard-working, capable and well instructed. The volume of messages handled in Russia is far less than in Great Britain, about twenty millions, as against ninety millions per annum; but on the other hand, the territory served by the Russian telegraphs is vastly greater and the enormous Russian distances and the arctic winters have introduced special technical difficulties which have been surmounted in a way that would do credit even to American telegraphic enterprise. There is a general demand on the part of the public for an extension of postal and telegraphic facilities, and there are hopes that the newly elected Gosudarstvennaia Duma, or Imperial Parliament, will recommend the appropriation of sufficient funds to enable these increased facilities to be provided. Meanwhile, the Russian post and telegraph department has made the best use of the means at its disposal, and succeeds in bringing in a very large annual profit to the state.

For working over moderate distances the Hughes printing telegraph system is employed, and nearly all the long-distance circuits are equipped with the Wheatstone automatic, the received tape being handed to typewriter girls for transcription, a considerable number of typewriters being used for this purpose both in the St. Petersburg and Moscow telegraph offices. Nearly all the telegraph wires are

5-millimetre iron (about 600 lbs. per mile), and this fact, combined with the colossal distances, renders the use of an automatic system such as the Wheatstone inevitable. There are about sixteen Wheatstone circuits in Russia, among others Petersburg to Rostov, 1,100 miles and two repeaters; Kazan to Omsk, 1,000 miles, and one repeater; Omsk to Irkutsk, 1,200 miles and two repeaters; St. Petersburg to Odessa, 1,000 miles and two repeaters. From Irkutsk to Vladivostok is about 1,800 miles, and from St. Petersburg to Vladivostok is roughly about 5,000 miles. The longest Wheatstone circuit in Russia is the special wire from St. Petersburg to Irkutsk on Lake Baikal. This is 6-millimetre iron wire (about 800 lbs. per mile), and the length of the circuit is about 3,800 miles with six repeating stations. Pekin is, roughly, about 1,000 miles from Irkutsk, and on one occasion the experiment was made of working through direct from St. Petersburg to Pekin. A speed of thirty words a minute was reached quite clearly; a noteworthy achievement, considering that the line consists of over 4,500 miles of iron wire.

When Mr. Murray arrived in Russia the great postal and telegraph strike was over, and normal conditions had been re-established, but in Moscow the telegraph department was still hampered to some extent by the destruction of its city wires during the riots last year. The strikers tore down the telegraph lines in all directions, and in various quarters of the city telegraph poles could be seen with a tangle of wires still clinging to them. The inconvenience caused by the destruction of the Moscow wires was serious, because Moscow is a great telegraph center, from which wires radiate all over Russia. Temporary lines have been erected, but the Government is not going to be caught again in this way, and arrangements are being made for putting city wires underground in cables.

The Murray automatic printing telegraph system has now been working for about two years between Edinburgh and London, and a complete duplex installation is being constructed for London-Dublin. The system has also been working for more than a year between Hamburg and Berlin, and it is now working between St. Petersburg and Moscow. The Indian telegraph department has ordered a complete duplex equipment for use between Calcutta and Bombay, a distance of 1,200 miles, and the Austrian administration is having an experimental set constructed for trial between Vienna and Prague. When sets have been installed between London and Berlin and between Berlin and St. Petersburg, it will be possible (owing to the power of re-transmitting messages automatically from the received Murray tape) for any of the cities, Edinburgh, Dublin, London, Berlin, Hamburg, St. Petersburg and Moscow (and by-and-by Vienna) to exchange telegrams with each other automatically without disturbing the local traffic between any two of these cities.—Electrical Review, London.

Muscles Toil at Telegraph Key.

Did you ever stop to think that when you sent that ten-word telegram you may have made the muscles of a telegrapher's hand work needlessly and that the additional work can be measured in motions at the average rate of twenty-eight a word? asks the Chicago News. Because you insisted on getting ten words in the despatch you caused the muscles to go through 280 motions, and every one may have done its part in robbing the hand and its active finger of just so much strength. Hand paralysis has come to more than one man who has had his hand continuously at the key for hours and days at a stretch.

The toil of the telegrapher as measured in muscle motions has just come to the front as a unique argument in a plea of ten operators at points near Chicago, who have sent a petition to Congressman Crumpacker, who represents a Northern Indiana district. The petitioners want the working hours of a telegrapher, and especially one who works in interlocking towers, reduced to eight hours.

Their chief argument is that they are forced to employ more muscle motions than any other toilers in the labor field. For this reason they, above all others, should be given an eight-hour day, they say, and receive the same monthly wages that they are getting now.

For instance, in sending the word "good" the operator's hand is compelled to make use of twenty different muscular motions. With the word "telephone" thirty-six are necessary. These embrace the downward movements upon the key, as well as the corresponding upward movements. It is estimated that continuous work for an hour means 48,000 motions, and for a twelve-hour day, 576,000.

The letter "p" is the longest in the alphabet when it comes to sending it over the wires. It necessitates ten muscle motions, and none of the other letters requires more than eight. In the "eight class" are "b," "h," "j," "q," "v," "x," "y" and "z." The alphabet, with the number of motions needed for each letter, follows:

A	..... 4	J	..... 8	S	..... 6
B	..... 8	K	..... 6	T	..... 2
C	..... 5	L	..... 2	U	..... 6
D	..... 6	M	..... 4	V	..... 8
E	..... 2	N	..... 4	W	..... 6
F	..... 6	O	..... 4	X	..... 8
G	..... 6	P	..... 10	Y	..... 8
H	..... 8	Q	..... 8	Z	..... 8
I	..... 4	R	..... 6		

The men who put forth the "muscle motion argument" are hoping it will win them a reduction of labor.

Those who contemplate subscribing for TELEGRAPH AGE, and who would first like to inspect a sample copy, should not fail to write for the same.

Subscribe for TELEGRAPH AGE, \$1.50 a year.

Dr. L. M. Rheem Indulges in Reminiscence.

(Continued from issue of May 16)

[The telegraphic fraternity as it existed thirty years ago at Omaha, continues to afford a theme sufficient in interest to still hold the versatile pen of Dr. Rheem closely to its delination, with which he concludes with this issue. These contributions of the Doctor have been extensively read, republished in the newspaper press, and have aroused a wide measure of attention.]

"John McNevin of the Omaha office was an extraordinarily fine operator and a very rapid sender. I recall a superb piece of work performed by him and Charles W. Hammond at St. Louis one Sunday night after a three days' interruption of our Chicago wire. We were stacked up sure enough; about eight in the evening I heard Ottawa call us; on answering he said, 'Here's St. Louis.' Hammond had patched up a wire somehow and in his usual accommodating way asked us if we had any business. We told him we had. On his telling us to let it come, I started in to send to him. As my particular specialty was sending a little slower than the slowest man that ever lived, I don't suppose I would have ever reached the bottom of the pile. McNevin came in and offered to relieve me, which he did, clearing the pile in a very short time. Hammond's receiving was just like everything else he ever did—that is, fine as silk. All that he said besides saying 'yes' in answer to question 'u tr?' was 'O. K., G. N.' at the end of the performance.

"Besides being a fine operator and a beautiful penman, John Morris was an expert clog and buck and wing dancer; he used to help keep things lively for us by his exhibition of this accomplishment.

"Charles Paxton was a quiet, hard working operator with the same vein of humor in his make-up that seems to have been so evenly distributed by nature among all the old old-timers to whom he belonged. William Wallace was a brilliant fellow, who will be remembered by many of the old Chicago boys.

"Everybody knew Bogardus; and in spite of his failing, or rather outside of it, there never was a cleaner, more honorable gentleman known in the profession. The same will apply to Schermerhorn, from whom I parted with sincere regret when the time came for him to 'move on.' Honey, who died a few years ago in Chicago, went West from Omaha, and later was connected with the Northern Pacific Railway. With the rapid development of the Northwest he became identified with large interests, and at one time was accounted to be a wealthy man.

"I shall always remember John Hanchett with peculiar affection. He was a humorist par excellence; the 'logbook' kept by him at night while he occupied the position of night manager would have been a paying proposition to any one who published it. It was completely filled with absolute gems, the most of which related to the business of the office. What ever induced me to let that logbook go, with other property, to the Western Union, is

more than I can now tell. John was sent to Omaha as night manager by Mr. E. D. L. Sweet, the president of the company, who told him that if he handled the 'force' all right he could be assured of further and rapid promotion. The day he arrived he called at the office and asked me what time he was to report for duty. I noticed a sort of a blank look on his face when he reported the first evening, and saw every one leave the office but himself. Until then he did not know that he was the whole show. He always after regarded this as a great joke on himself, and as long as he stayed in the position was careful to enter on the logbook all the meritorious work, as well as the derelictions, of his 'force.' John died a few years ago in California, after a long and distressing malady.

"Before closing the personnel of the Union Pacific-Atlantic and Pacific family, I want to say a word respecting its chief, the late lamented John Jay Dickey, with whom I was intimately associated for nearly a quarter of a century. I have not proper words at my command to adequately express my high appreciation of him as a man and an employer. Kindly and generous by nature, he was an ideal leader as well, a staunch friend to all his associates and subordinates, who, without an exception, sincerely mourned his untimely death.

"In his note to me Mr. L. H. Korty truly says: 'No list of names of old-time telegraphers at Omaha would be complete without that of John A. Creighton, who assisted his brother Edward in the construction of the overland telegraph line. He was always a warm friend of the operators. John inherited most of his brother's immense wealth, which has been considerably added to by his own efforts and business sagacity. In recent years most of his energies and a large share of his wealth have been devoted to charitable work, building of hospitals, institutions of learning and the endowment of same at Omaha. In recognition of his good deeds, Pope Pius conferred upon him the title of Count of the Holy Roman Empire. Count Creighton is still living in Omaha, and bears his honors with proper dignity.

"Likewise in this connection we should not forget the name of the Hon. Edward Rosewater, the distinguished editor and proprietor of the Omaha Bee, which has grown from a little hand-bill in 1870 to a metropolitan journal of world-wide renown, occupying a building which is a marvel of elegance and convenience as the home of the great paper whose name it bears. Rosewater came to Omaha as a common operator. He left the service, I believe, during the strike of 1870. As I understand it, the Bee was established as a sort of protestant in the interests of organized labor. It has passed through many vicissitudes, coming many times perilously near shipwreck, which was averted by the good seamanship of its founder. To-day it is a power in local as well as national politics. It has the same stinger to-day that it had the day of its

birth, and can use it with neatness and despatch on any one whose actions are not *comme il faut* according to its editorial standards.

"One other product of Omaha should be mentioned. He was not an operator, nor had he any connection with the telegraphic profession. At the time of which I write he was just a broth of a boy with a big vision, which has since materialized. I refer to Henry D. Estabrook, solicitor of the Western Union Telegraph Company, New York city. While Henry is now one of the great telegraph family, I don't suppose he would recognize a dot or a dash if he should meet a pair of them on the street. But when he goes against an abstract proposition as to the rights and wrongs of things telegraphic, it is usually his meat; and when he picks up a few chunks of the English language and begins to juggle them into an oration, cripples and children should immediately get back of the ropes, for there will be something doing in just a minute. His orations are known in all parts of the country, as absolute patterns of good English and exponents of higher life and ideals. As I have always been proud of Nebraska products, I am particularly proud of Henry. Hence this mention.

Thirty Years Ago, with the Boys at the Key in Missouri.

BY J. W. HAYES.

Pleasant recollections of highly esteemed friends of former days are a great solace and comfort as one grows older, hence it is that the memory of my St. Louis days in 1876 always fills me with gladness. As I turn my mind's eye backward and review the faces and forms of the dear old friends of thirty years ago some thoughts have a tinge of sadness, for many of those whom I knew have passed over to join the great majority.

Upon my first arrival in St. Louis I was met at the depot by Fred B. Moxon and William T. Loper, who welcomed me to the city. I shall never forget the generous and hospitable manner in which I was received.

The chief operator in the Western Union telegraph office at that time was William W. Cummings, upright in character, genial in disposition, a man possessed of many desirable qualifications. He was a man that took much interest in field sports, and David S. Anderson, of Chicago, will probably remember the occasion when his big Chicago baseball team hit the dust, victims to the prowess of Mr. Cummings's nine. A. C. Vantine was assistant chief operator and wire chief. He was always full of anecdotes and had a story to fit any phase and condition of life. Charles H. Lawson was temporary night chief, but he went to New York, where he has since been located in the Western Union service; he was succeeded by John H. Topliff, who afterwards succeeded Mr. Cummings as day chief.

One of the most beloved men on the force was Sidney B. Fairchild. He worked the old western pony report wire during the week and was our Sunday night chief operator. He was an educated man and possessed an innate refinement of character. I learned much under his paternal tuition and his influence for good was felt by the entire force.

Edward H. Parmlee, now one of the sages of the St. Louis office, was the gayest of the young men of that day. His hearty laugh and cheery words were much in evidence. William T. Loper, one of the finest operators and most gentlemanly of men, handled The Associated Press, "Patsey" Ayres being the sender in Cincinnati. Mr. Loper was a hard student, a thinker, and later became a noted journalist and stenographer at the national capital and in New York. He died in April, 1895.

The person who seemed to have the brightest future was Fred B. Moxon. He was still in his teens at this time, but despite his youth he was looked upon as a phenomenal operator. His sending was superb and the peculiar copy he executed was like a picture. Mr. Moxon, with myself, published a little telegraph paper in 1876, entitled "The Electric." It was a bright, breezy sheet and numbered among its contributors such happy spirits as Charles Selden and John C. Mattoon. The office poet and artist was John S. Cassidy, and he had a faculty of cartooning everything and everybody, nothing escaped his satirical pencil. He was a great operator in those days and as entertaining at home with his banjo as he was during office hours with his other accomplishments.

Theodore P. Cook, now the general superintendent of the western division of the Western Union Telegraph Company at Chicago, was one of the pleasantest members of the day force. He looked after the way-wires, and it is needless to say that that branch of the office service was well taken care of. Thomas P. Wheeler as an operator was a star of the first magnitude, and together with James S. Nelson and James A. Murray formed a trio of choice spirits, the equal of which was not to be found readily elsewhere. Edward A. Keene, dainty in appearance and gentlemanly in bearing, was especially a good fellow to meet. Charles T. Day, too, was a prominent member of the day force and a man of excellent reputation.

Included among the rest of the operating force at this time were: Paul Murphy, William J. Foy, one of the best fellows in the world; Michael Tully, Charles Burroughs, the office draughtsman; George King, who had the reddest hair I ever saw; the two Eckert brothers, one of whom was called the "great American balloon man" on account of his immense size; Winfield S. French, one of the handsomest and most polished men in the business; Lara N. Boone, who had

just come from Hannibal, Mo., the home of his youth, and who thought St. Louis was a "wild town," and James W. Cook, a great "jiner" and who belonged to about every order then in existence. John W. McDonald was another of the great operators of that day. He succeeded Mr. Loper as press operator. William A. Manley, David S. Ryan, A. R. Pippitt, David Campbell and John L. Morris came to the St. Louis office from Texas in 1876. This quintette were a big acquisition to the office. I have forgotten the name of the all-night chief operator. He was a foreigner.

R. W. Irwin, known from Chicago to Galveston as "Canada's fastest man," was a whilom member of the St. Louis office. He was a comedian, a musician and a good operator. He died in 1880 somewhere in the South.

I would like to go over the entire personnel of the office force, making mention one by one of all the old friends, but your space will hardly permit.

Of the faces so familiar in those days many have gone on their long, last journey. As near as I know the names of those so departed are: Sidney B. Fairchild, William T. Loper, Frederick B. Moxon, William J. Foy, William W. Cummings, James C. DeLong and J. A. Murray.

An operator in the St. Louis office was always treated courteously and with consideration when he had occasion to call on Col. R. C. Clowry, who was then superintendent of the district. The Colonel liked to become personally acquainted with his men, and a fifteen-minute conversation with him was apt to establish an amity of feeling, fruitful of good results. The Colonel was regarded as a man of keen insight and perception, broad minded and with a strong force of character. It was predicted thirty years ago by S. B. Fairchild that eventually the Colonel would fill the chair of the president of the Western Union Telegraph Company. How true this prediction events have proved.

A quiet, unostentatious gentleman occupied a desk in Col. Clowry's office. This was Mr. Isaac McMichael, who was the Colonel's chief clerk, and the tutelage he received in this school of telegraphic discipline and management evidently qualified him for the position he has since attained, that of vice-president and general manager of the Great North Western Telegraph Company, Toronto, Ontario.

James P. Cassidy, now manager of the Western Union Telegraph Company at Minneapolis, Minn., was one of Mr. McMichael's principal clerks, and he, of course, availed himself of his opportunities to gather knowledge. Edward J. Nally, now the general superintendent of the Postal Telegraph-Cable Company, Chicago, was also employed in a clerical capacity in Colonel Clowry's office at this time. The success that has followed most of the men who were attached to Colonel Clowry's department shows con-

clusively the value of the training they received when in that association.

E. H. Brown was manager and Augustus Hackett and Richard Brown were the day and night clerks, respectively. R. H. Bohle was manager at the Merchants' Exchange. He was very popular with the business public, always attentive, accommodating and never losing patience.

The Atlantic and Pacific Telegraph Company built their line into St. Louis in 1876. That company was fortunate in securing the services of Charles W. Hammond as manager. Mr. Hammond was a very energetic and far-seeing man. He appointed W. H. Spencer as manager of the Merchants' Exchange office, and after that there were no vacant moments on the company's solitary wire to Chicago. George E. Millar and Charles Cloud were respectively the day and night operators. Mr. Spencer became chief operator for the Western Union after the consolidation of the Atlantic and Pacific with that company. He was a noble fellow, loved by all who knew him. He died about three years ago. Charles W. Hammond was but recently retired from the superintendency of the Missouri Pacific telegraph system honored and loved by all.

I worked the "Long Horn" wire in St. Louis taking in Dallas, Sherman, Houston and Galveston with repeaters at Denison. And who was attending the repeaters at Denison? None other than our old friend Jacob Levin, now the general superintendent of the southern division at Atlanta, Ga., of the Western Union Telegraph Company. Any one who has had the care of button or Milliken repeaters with the fastest kind of work expected, can imagine how the poor fellow attending the repeaters must necessarily get rounds of abuse. This was very much the case on the Long Horn wire, but I would like to say that never did I hear a word of protest from Mr. Levin. Always attentive and patient, with a "soft answer which turneth away wrath," the boys soon got to realize that in him they had no legitimate cause for complaint.

There may be vast improvements in the equipments and furnishings of the St. Louis office since the days of which I have written, but certainly there are no truer hearts nor more generous hospitality shown in these latter days than were found among the Missouri boys of 1876.

Consul James C. McNally, of Liege, Belgium, writes that creosote injected into wood has the well-known preserving effect, but as injected under a German process, according to "The Tramway," the effects are considerably enhanced. It is said that this process has succeeded in submitting the resinous woods to the action of creosote, heretofore considered refractory.

The Associated Press Men's Work at San Francisco—How the Earthquake News was Gathered and Sent Out.

Paul Cowles, superintendent of the western division of The Associated Press, has transmitted to General Manager Melville E. Stone a report of the work done by the association's men in connection with the San Francisco earthquake. Mr. Cowles says in part:

"When the earthquake came at 5.13 in the morning of April 18, Night Editor John Finlay and Operator Ben McInerney were on duty. The building which was occupied by the Western Union Telegraph Company and The Associated Press did not fall, but plaster and chandeliers came down with a crash. Our wire to the East had closed at five o'clock, but the state wire was in operation. Instantly all telegraph communication with the outside world was lost.

"Finlay and McInerney did not leave the building. Finlay wrote a bulletin telling of the earthquake and McInerney rushed up stairs to the Western Union office to get it off to New York. The telegraph operating room was a wreck and there were no wires. He filed the bulletin, however, in the hope that a wire would be secured. In the meantime Finlay was at his desk turning out copy.

"Chief Operator R. E. Geistlich had left the office at five o'clock, and when the shock came went back. He saw the hopelessness of the situation, and taking McInerney with him rushed for the boat to Oakland to make wire arrangements. They arrived in Oakland about 6.30 and found conditions there almost as bad as in San Francisco, so they returned.

"I arrived at the office about 5.45 after a rapid sprint through the streets. It took but a moment to ascertain the telegraph situation so far as the Western Union was concerned, so I went to the Postal office a few blocks away. There Electrician Swayne was found tinkering with a feeble wire to Chicago. He held out a faint hope for a wire, so I wrote a bulletin and stood over him while he tested and manipulated.

"The Pacific cable office was in the same building, and I filed a cable bulletin addressed to you, to be sent across the Pacific around the world to New York. The cable operator declined to take the message, saying it was irregular and he did not know the rate. I offered to pay any rate that would be charged, but the cable man was confronted by an emergency that the cable company's rules had not provided for and he declined to take the message. He did send a message to Honolulu, however.

"Then I went back to Swayne and nursed that bulletin. Finally, there was a hopeful click and away went the news to Chicago. In the meantime Night Manager Johnson, of The Associated Press; Day Editor Curtis and my stenographer Creighton had arrived, and the story of the earthquake was being written as rapidly as the type-

writers could work. We were at last given a wire by the Postal company, and the news began to go out. Just after a fair start the wire failed, and we danced up and down with impatience. We eventually got another start, but at eleven o'clock we had to leave the Postal building, as the fire was close by.

"While all this was going on I realized that the Federal troops would be called to guard the city, so I sent a man to General Funston's headquarters for passes for our men. The general issued half a dozen. I also sent for an automobile and scoured the water front for a launch in which to send men to Oakland, as the ferryboats had stopped. Not a launch was to be found, but an exhibition of nerve and the magic name of Funston on a pass induced the captain of the government tug McDowell to take Operators Geistlich and Lynch and a newsman across the bay to Oakland. There workable wires were secured early in the afternoon, and the operators got busy. They had plenty of copy.

"I went back to the office and found all the force there except Jerry Carroll, one of the night editors. The men were sent out to various sections of the city to ascertain the damage. I was alone in the office at one o'clock when soldiers ordered me out, as the building was about to be blown up to stop the progress of the fire. I moved in a hurry to the Bulletin office on Bush street and waited for the men to appear. They had lost the trail, however, and I sat in solitary state waiting for them to turn up.

"Finally I began to write a nightlead for the morning papers. I wrote the story, but I can't remember now how it got to Oakland. All I know is that it got there somehow.

"About dusk Carroll arrived in a badly battered condition. A wall had fallen on his house and he had spent the day in being patched up by a surgeon. He immediately went to work and early Thursday morning went over to Oakland with his story. There he found Johnson, Curtis, McDonald and Finlay. At noon on Thursday Moore arrived from Los Angeles and came over to San Francisco Friday, and never was a man more welcome. I had been appointed a member of the mayor's committee to assist in the administration of the city.

"Vincent arrived from Portland Saturday morning and was another welcome addition. My automobile had been confiscated Wednesday night by the soldiers and I spent Thursday and Friday fighting for a wire and hunting for an automobile. Municipal headquarters, the news center, had been established on Filmore street, three miles from the ferry. There was plenty of news in San Francisco, but the problem was to get to the ferry and over to Oakland. It was sent by messengers on foot, on horseback and in express wagons.

"Saturday I managed to hire an automobile and have been struggling ever since to keep it from being confiscated. Thursday night the Postal had a wire from the ferry to Oakland and we were allowed to send 500 words on it. Next day some one cut the cable, and even that small comfort failed.

"Sunday night Operator Brown arrived from San Diego, and was of material help to our operating force.

"Monday night we secured a wire from the telephone company, which we turned into a Morse circuit. We used this wire for two nights of joy, but on the third night the telephone company went out of business, their cable having been blown up, and we were forced back to the old system of delivering by messenger to Oakland. I secured a permit for the Western Union to run a wire into Municipal headquarters at Franklin Hall, and to-day, at noon, The Associated Press commenced operating the first regular wire out of San Francisco.

"I want to call to your attention the splendid example of devotion to the service shown by everybody from newsmen and operators down to messengers. Most of them have lost their homes and are sleeping in camps and on benches. They braved falling walls and went through the city at night at imminent danger of being shot, and no one hesitated when ordered on dangerous duty. I do not know how our stuff reads, for I have not seen an outside paper, but I do know that the men here have cheerfully given the best that is in them. Your messages of encouragement have acted as a stimulant to the tired and overworked men.

"In twenty-four hours succeeding the earthquake The Associated Press sent 21,300 words from San Francisco."

Wireless Telegraphy.

Germany has issued invitations to twenty-nine different states to take part in an international wireless telegraph conference at Berlin, June 28. Among those invited in the Western Hemisphere besides the United States are Argentina, Brazil, Chile, Mexico, Peru and Uruguay. Japan, Siam and Persia have been invited, but China has not been asked to send representatives. Secretary Metcalf, of the department of commerce and labor, at Washington, has designated John I. Waterbury, president of the Manhattan Trust Company, of New York, as the representative of that department at the conference.

According to the Wyoming Tribune, of Cheyenne, Wyo., the city lines and long distance toll lines out of Cheyenne of the Rocky Mountain Bell Telephone Company were rendered inoperative recently during business hours for several days, owing to wireless telegraph interference from Denver, Colo. Although Cheyenne is 100 miles distant from Denver, the wireless telegraph signals affected all the telephone wires in Cheyenne

and the toll lines running out of the city. The dots and dashes of the Morse code could be easily read and sounded in the telephone receiver like the buzzing of bees, the noise being so loud that it was impossible to talk over the lines. The station at Denver is stated to employ 50 kw. in wireless transmission.

The First Galvanometer.

Mr. Henry A. Reed, president of the Bishop Gutta-Percha Company, New York, himself an old-time operator and a forty-niner of the telegraph, never loses interest in the profession of which he was a member many years ago. A few days ago, being in a reminiscent mood, Mr. Reed sent the following to TELEGRAPH AGE:

"The telegraph operator of to-day probably thinks he has his share of troubles, but he knows little of the vexations incident to the business in its early days. Then an operator had not only to repair his own instruments, which were frequently injured by lightning (arresters being almost unknown), but also to repair the lines himself, because repairs were not generally to be had, and in order to expedite such repairs he had to locate faults without the aid of experienced electricians and without the delicate instruments now employed to perform that service. For several years it was thought possible to decide only between offices where the trouble on a line occurred, and accordingly offices for testing purposes were established near together in order that the line might be quickly repaired by sending out the operator from the office on each side of the fault. As early as 1851, however, faults were located by myself, and probably others, by means of relay magnets and the shock measured by fingers and tongues.

"In 1856, after having located a cross and determining that it was ten miles below Poughkeepsie, where I had charge, Prof. S. F. B. Morse, who was a frequent visitor at my office and a resident of Poughkeepsie, became very much interested in my experiment, which seemed new to him. A few days afterwards he presented me with a small galvanometer, made by Henly, of London, which he had brought with him from England but a short time previous. He remarked as he handed me the instrument: 'I think, Mr. Reed, you will find this better than your fingers in locating faults.'

"After the Telegraphers' Historical Society of North America had been organized, and we were gathering different instruments as mementos of early experiences, it was found that this galvanometer was the first to be used in this country for the purpose of testing for line trouble. This instrument is now deposited in the Morse collection in the Smithsonian Institution at Washington."

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of TELEGRAPH AGE, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

The Western Union in the San Francisco Disaster

BY H. J. JEFFS, CHIEF OPERATOR.

I hope it is not too late to say a few words of praise for the boys who stood by the helm of the Western Union Telegraph Company in its distress at the time of the San Francisco disaster, and brought it to the front amid the praise of its patrons and the general public.

From fragments a telegraph office of goodly proportions was built, and it was done by the Western Union boys who thought not of recompense. They were loyal to their employers and the cause. They risked their lives. They thought not of meat or sleep until exhaustion and fatigue overtook them and they fell asleep at their keys. They left their families on the hillsides and went in search of their fellowmen, then they found the Western Union and were quick to see what grand service they could be to suffering humanity. Such men the Western Union company are proud of. They could not do otherwise under the leadership of so grand a man as General Superintendent Frank Jaynes, whose thoughts were first for the welfare of his employes and second for the company's interests. His first instructions were to secure comfortable quarters for the operators, and second to establish an office from the odds and ends at our disposal. Some who had left their families on the hills or in the parks did not see them for a week but they worked on and on, trusting that the Almighty hand that swayed the earth would protect their dear ones. But every minute brought more anxiety as the fire stretched forth in its sweeping magnitude, driving the occupants of the great city to its remotest parts dealing death and destruction in its path. Steadily they worked as they watched the tongues of fire shoot high into the heavens and the seething flames spread, the volumes of smoke by day and the brilliantly illumined sky by night. They were doing a mighty work for those worse off than themselves and thought only of the distress that such a catastrophe would bring. Relief was urgent and it must come or all would perish. And when one was asked to deliver a message to General Funston in San Francisco, it was "Jim" Cuyler who volunteered to do it, saying: "If any one can get it there I can and I'll do it or die in the attempt." He started out with three cheers from the boys around the pole where the wire had been tapped and the message received from Washington.* It took him hours but he performed the task. He beat his way through the burning streets and past guards some more or less intoxicated and reckless; he narrowly escaped death from falling walls and braved the terrors of dynamite and exploding gas mains. Finally he reached the Hall of Justice where he secured a

* According to the official report Chief Operator Jeffs remained at the top of the thirty-foot pole giving directions to his scattered forces and endeavoring to straighten out the mass of tangled wires, as well as arranging temporary quarters near that point.

badge which gave him liberty in the city; he visited the Western Union building at the corner of Pine and Montgomery streets but he found nothing but gloomy surroundings and deserted walls. He returned to West Oakland foot sore, sprinkled with snowy white particles of plaster and a complexion that would make a jack tar envious, from the tremendous heat of the conflagration, but he accomplished the task for which he so determinedly started out and delivered messages from Col. R. C. Clowry, president of the Western Union Telegraph Company, Melville E. Stone, general manager of The Associated Press, and others. This is only one of the many heroic deeds with which the Western Union boys can be accredited.



The old Main Office of the Western Union Telegraph Company, at San Francisco, which was destroyed by earthquake and fire.

At the time of the earthquake there were on duty in the Western Union building the following persons: J. A. Lowery, all night chief operator; W. R. Melville and J. W. Whiteley, operators and A. Winn, case boy. Their escape was miraculous. The building shook gently at first, then it swayed. Old mother earth heaved like a mighty wave and settled. The buildings creaked and plaster flew in all directions. In a few seconds of time the walls of the Western Union office were devoid of all ornamentation, the dynamos had stopped and the click of the sounder ceased. People ran through the streets half clad and frantic. Some injured, others lay dead under fallen brick.

The disaster happened at a most fortunate time as there were not many persons in the business district at that hour. Many hucksters were caught in the marketing district and buried, teams and

all, under fallen debris. But our men stuck to their posts of duty and with pale faces and trembling hands wire after wire was felt, but no electrical impulse could be found. It was a deadly stillness. Wire Chief R. D. Weeks rushed to the office expecting to find all dead, and Electrician H. S. Converse was also one of the first on the scene, and they worked indefatigably to restore the broken threads and to place the office in condition to handle the vast amount of business that would certainly follow such a disaster—they had not learned that the city was then on fire in a dozen or more places. In the meantime I wended my way to Oakland pier, from my home in Oakland, and such a sight that greeted my vision! Chimneys down in all directions, houses leaning and swaying from their foundations, water mains broken, wires a tangled mass and rails twisted out of shape. When I reached the despatcher's office at Oakland pier everything was quiet and the six or eight despatchers on duty were discussing the terrifying event. Their wires were all short circuited and many trains were either tied up or were flagging over the road. They could not even reach the first station, two miles



The new temporary Main Office of the Western Union Telegraph Company at West Oakland, Cal.

away on any wire. In a few minutes an instrument commenced to click. It was R. D. Weeks, who had reached the cable box on the 'Frisco side of the bay. He informed me of the conditions in the city and I started out with a light engine to find communication. I found it at West Oakland after opening all wires on both routes and feeling the wires one by one. I first got the railroad office at Sacramento and it was not long before I was in communication with Superintendent F. H. Lamb at Goldfield, and later with our officials at Chicago and Assistant General Manager J. C. Barclay, at New York, who were quick to grasp the situation and give the necessary instructions. Mr. Harriman was connected with the railroad officials at Oakland pier and train wires were soon made up in a roundabout way. All day and part of the night, working by the dim glare of a lantern, I stayed at my arduous work, endeavoring to make up circuits with the aid of a single relay. The wires were crossed in a hundred places, broken and grounded. Operators had deserted their stations at many places and it was a trying situation, but the day was a glorious

one, and beyond the sorrow that brought tears to the eyes of robust men there was the everlasting cheerfulness of the warm atmosphere and the exuberating sunshine.

By nightfall we had a little telegraph office, and besides The Associated Press and railroad wires, we had a wire to New York, one to Chicago and one to Portland, Ore., all spreading details of the great disaster and appealing to our more fortunate neighbors for assistance for the struggling masses across the bay. We had rented or confiscated a cottage nearby and as fast as instruments could be gathered we moved the dear lady occupant to the home of her mother and took possession of the entire building, but it proved to be too small. San Francisco and New York were kept in constant communication from early morning.

It was well that such was the case, as the fires in the city had spread beyond control, the water supply had failed and the city was doomed to destruction. Nothing could be saved and our people lost everything but their lives, but they were thankful to have been even so fortunate as that. Their losses were only material and above it all still floats the glorious emblem of liberty and prosperity. They are happy and contented and very few have deserted the scenes. The Western Union Telegraph Company, under the supervision of General Superintendent Frank Jaynes, Superintendent F. H. Lamb and their subordinates, have done much to make them so. By the generosity of these officials and the company, the employes had comfortable places to lay their tired and weary bodies and food to strengthen them, and they will soon be enabled to help themselves.

Day after day, through sunshine, rain and fog, I persevered with the wires from the pole, while Messrs. Weeks, McCormick, Lowery, Wilson, Brown and Melville tussled with the vast amount of business, the magnitude of which never before was experienced on the Pacific Coast. The boys tugged away at beef sandwiches with their left hands and bunches of special with their rights. Electrician H. S. Converse, Night Chief R. W. Gillette and Manager J. V. O'Brien looked after the company's interests in the city, resting for a few hours at night on the cold marble floor of the ferry building. I. N. Miller, Jr., and A. W. Sine did not have hands enough to hold what was heaped upon them. Grateful were the boys when the Wheatstone girls came around with baskets of specially prepared delicacies for those at work.

In three days' time Electrician Louis McKisick reached here from the East and Wheatstone and duplex sets were set up in the twinkling of an eye, and Mr. McKisick holds the record for quick work. He brought all the telegraphic paraphernalia two thousand miles, built an office 60 by 100 feet and put in an up-to-date plant—one that the company can well be proud of—and had 170 operators at work in less than one week's time. We take off our hats to Louis McKisick.

The International Telegraph Tournament at Boston.

Editor Telegraph Age:

I have read with a great deal of interest your recent articles on the coming tournament in Boston, and I would like to say a few words on the subject.

Your correspondent of April 16 makes a good point when he says give us more useful things and less cups. If I were lucky enough to win a cup worth \$200 or \$300 I do not think I would care to leave it on my sideboard to be gobbled up by the first sneak thief. It would probably be the part of wisdom to keep it in a safe deposit vault where it would be worth about as much to me as last year's straw hat. In the issue of May 1, Mr. S. F. Shirley says that the tournament is being held for charity and that these articles (cups) are contributed by generous friends. But is it more charitable or generous to give a cup than to give its equivalent in money? I do not think so, and see no reason why a contributor should not be just as willing to donate a watch, a diamond ring, the cash itself, or any other equivalent of the amount he had decided to give. What is the use of trying to hide the fact that the money would be the most acceptable prize to the average operator?

In regard to the team, or "bonus" class, I understand it is to be limited to hand senders. This seems to me unfair for the following reasons: It is stated that the Postal Telegraph-Cable Company rule is to govern this contest. There is no rule in that company requiring bonus operators to send by hand. Nor is there such a rule in the Western Union Telegraph Company's service. On the contrary, an operator is permitted to use any method of sending that in his judgment is the best. This is perfectly proper, and if he sends more business with a machine than another man sends by hand he is rewarded with increased earnings. It will probably be said that if one man were permitted to use a sending machine in the tournament he would be given an undue advantage over his competing hand sender. But would he? If he is bright enough to see the benefits to be derived from an automatic sending machine and by persistent effort and hard work becomes skilful enough in its use to distance the hand sender, is he not entitled to the fruits of his work? Why should he be forced back to the level of his less progressive brother? Is it not rather up to the latter to realize that in order to keep in the front ranks of his profession he must adopt new and progressive ideas and methods? Would it not be just as consistent to bar the typewriter and compel the receiver to use a pen?

Philip J. Faulkner.

New York, May 24, 1906.

Commercial Telegraphers' Union of America.

The official souvenir of the convention of the Commercial Telegraphers' Union of America held at Cincinnati, beginning May 7, and which was distributed free to all delegates, is a handsomely gotten up pamphlet, reflecting credit upon those who undertook its production. It printed the programme of the daily meeting of the convention and was abundantly illustrated, giving pictures of officials and others, also many of Cincinnati's show buildings, parks and other points of interest. Under the heading of "The History of the Organization" this appeared thereon:

"Ten or fifteen locals, representing the International Union of Commercial Telegraphers, held a convention in Chicago, 1902. Another organization formed in the East, known as the Brotherhood of Commercial Telegraphers, convened in Pittsburg in December, the same year. Two months and a half later, after considerable agitation in both organizations for an amalgamation, conferrees from both organizations met at Washington, and on March 15, 1903, the two organizations were amalgamated into the Commercial Telegraphers' Union of America. The first convention of the latter was held in New York during the week of July 19, 1903. The second annual convention met at St. Paul during the week of July 19, 1904, at which convention biennial sessions were voted to be held. Cincinnati was chosen as the convention city for the third regular and first biennial convention.

"At the New York convention the organization had fifty-seven local reports. At the second, held at St. Paul there were eighty-seven locals. The third, held in Cincinnati, one hundred and nineteen locals were represented.

"During the past twelve months sixteen schedules and wage scales were presented to employers. The national president, S. J. Small, secured increased salaries and reduction in working hours in fourteen cases. Ten of the schedules provide for the employment of union telegraphers only, and in four cases secured increase in wages and reduction of hours without union contract."

The direct Wheatstone working on the Indo-European Telegraph Company lines now obtaining on all the company's circuits has been extended to the London-Constantinople section, telegrams being transmitted between those points without intermediate retransmission by automatic Wheatstone working over the company's lines and the cable of the Black Sea Telegraph Company.

Sample copies of TELEGRAPH AGE will be sent free to all intending subscribers.

TELEGRAPH AGE has helped many a telegrapher in his career. It will help you. Send for a free sample copy.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

PHILADELPHIA, WESTERN UNION.

The sudden death of Rodney Smith on May 9, mention of which was made in this column May 16, removed a man who was highly esteemed in this office. He was a native of South Deerfield, Mass., where he was born March 16, 1852. Going west, he learned telegraphy at Quincy, Ill., subsequently becoming identified with the railroad telegraph service. Entering the employ of this company he later became manager of the office at Atchison, Kan., a position he retained for a number of years. In 1887 he was transferred to a like post at St. Joseph, Mo., where he remained until 1903, when, in seeking needed rest and a change of climate he came to Philadelphia. Refusing the proffered managership of an important office, his wishes were respected and he became an operator in this office, holding the position up to the time of his death. The interment was at Quincy, Ill.

PHILADELPHIA, POSTAL.

A good spring business with a prospectively busy summer, is one of the chief reasons for additions to our force. Among the most recent arrivals are Messrs. N. J. Herron, from Pittsburg; S. J. Reidel, formerly of this office; R. J. Madell and W. T. Dawson.

Miss McTague has resigned to accept a position in a broker's office.

Some tall hustling is done these mornings to keep the heavy berry business on the move. Messrs. E. M. Carpenter, J. B. McKeegan and Horace Steltz find themselves up against it, but never so badly piled that they cannot soon diminish it.

The additional space acquired in the operating department by crowding the manager's quarters and encroaching on the public receiving room, will be utilized to accommodate eighteen new single sets, two quadruplex and two phantoplex sets, all of which will be speedily installed.

With the appointment of Mr. William Griffith from the Drexel Building branch office to the night managership of the Broad street station branch office, things at the latter place have resumed their normal condition. Mr. H. B. Nunneville fills the vacancy created at the Drexel building office.

Miss Alice C. Davis is now night operator at the Germantown office, vice Mr. A. Peoples, resigned to go with a broker.

NEW YORK, WESTERN UNION.

Mr. Oscar Zilly has been appointed manager of the Maritime Exchange office, vice Henry Holland, deceased.

Mr. Andrew Turner, of the first Boston bonus wire, who has been absent on a three-weeks' vacation, which took him on a shooting trip through New England and Canada, is back at his desk again.

Lawrence M. Keating, formerly an operator in this office, who was injured in a trolley accident some time ago while on his way home from Coney Island, died at the Kings County Hospital, Brooklyn, N. Y., on May 14. Interment was at Allentown, Pa.

Harry Dunn, western traffic chief, has returned from his vacation.

Traffic Chief W. B. Purcell is absent on his vacation.

Morris L. Wescoe, formerly of this office, and Miss Marie McCormick, a member of the operating staff, were married on May 14, and sailed for Scotland the same day on the steamship "Ethiopia." Mr. Wescoe will be stationed at the Eastern tower, Machrihanish, Scotland, in the employ of the wireless telegraph.

Miss Clara Ayres has been transferred to the Stock Exchange office.

Wire Chief H. C. Worthen has resigned to accept an outside position with a brokerage firm.

The following changes have taken place: Wire Chief James McGuire to western switch, vice H. C. Worthen, resigned; Traffic Chief H. S. Pearce to Erie switch, and Joseph Pogue promoted to traffic, southwestern division.

My Motto—Honorable Dealing.

My specialty factory rebuilt Remington and Smith "mills" at reasonable prices. New York representative for sale of the new model No. 3 Mecograph. Apply to me for terms, circulars, etc. D. A. Mahoney, 253 Broadway, New York.

NEW YORK, POSTAL.

The Rowland octoplex system is soon to be installed, and tested on one of our Boston circuits.

The following changes have occurred:

Charles B. Obst, eastern night traffic chief, has been transferred to the western traffic, days.

J. W. O'Ryan has been promoted from assistant city chief, nights, to eastern traffic chief, nights, vice C. B. Obst.

J. A. Dupuis, night city chief, has been transferred to assistant city chief, days.

J. M. Mearns, day assistant city chief, transferred to night city chief.

The late arrivals here include: John P. Roohan, James A. Meade, John Yannacie, A. Morris, R. J. Van Hoff, James Gunderson, A. W.

Cervante, James A. Holmes, W. J. Hogan and Charles H. Gessner.

The resignations are: L. M. Strong, F. W. Robinson and Frank Mican.

OTHER NEW YORK NEWS.

Assessment No. 449 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of John E. Reichert, at Kittanning, Pa.; Thomas Stevenson, at Jamaica, N. Y.; Percival K. Jones, at Rochester, N. Y., and David H. Purdon, at De Land, Fla.

Mr. Perry Chamberlain, formerly city solicitor of the Postal Telegraph-Cable Company, is now the New York representative of the Campbell Art Company, of Elizabeth, N. J. Mr. Chamberlain has had wide experience in his new line of business and his friends wish for him every success.

The summer outing of the Magnetic Club will take place on Tuesday, June 19, at the Cove Hotel, Livingston, Staten Island. As usual, the Western Union Telegraph Company will place at the disposal of the club the cable steamer "Western Union," which will carry the members to and from the grounds. The programme will include a game of baseball and other outdoor sports. Many appropriate prizes will be distributed among the members.

The offices of the Serial Building Loan and Savings Institution, which have been occupying temporary quarters on the fourth floor of the Postal Telegraph Building, 253 Broadway, New York, have been moved to permanent quarters on the seventh floor of the same structure, where ample space is provided to take care of the association's growing business.

The Morse statue in Central Park was most appropriately adorned with flowers on Decoration Day. While this beautiful practice is carried out in accordance with the annual custom of the Morse Club, whose object tends to keep the name of Morse ever fresh in the loving memory of those to whom his gift of the telegraph is as their alma mater, its observance this year was rendered the more striking by the interest shown in the performance by numerous Western Union officials. The contributions of these gentlemen for the purpose, made through the committee having charge of the affair, of which Marion H. Kerner was chairman, were of a generous nature, and were received from John C. Barclay, assistant general manager; B. Brooks, general superintendent; E. M. Mulford, superintendent; Herbert Smith, assistant superintendent; T. A. McCamman, chief operator; W. J. Dealy, superintendent commercial news department; T. M. Brennan, F. D. Giles, and others.

Recent New York Visitors.

Mr. Frank B. Knight, special agent of the Southwestern Telegraph and Telephone Company, Dallas, Tex. Before his advent into the telephone business Mr. Knight was manager of

the Western Union Telegraph Company at Omaha, Neb., and is well known in telegraph circles. His numerous New York friends were glad to greet him while he was in the city.

Work of the Signal Corps at San Francisco.

Reference has been made more than once to the work done by the United States Signal Corps in San Francisco. In a recent article on the subject, the Chronicle says: "When the work of the army in San Francisco in the days of the fire is told by those who know whereof they speak, there is one branch of the service which will receive praise that will be as unstinted as it is merited. Without the men of the signal corps, commanded by Captain L. D. Wildman, the 2,500 troops under General Funston would have worked like so many scattered individuals, without orders and without a head. 'I was once at the head of the signal corps,' said General Greely, 'and I feel a delicacy in speaking of their work here as I would like to do. But you may say from me that for three days the only electrical communication in the downtown section was over the wires that Captain Wildman's men strung over ruined walls through the heart of the burning district.' At 10 o'clock on Wednesday morning they had a wire from the Presidio to the edge of the burning district. Until 3 o'clock that afternoon, when the Postal Telegraph building went down, they kept one wire opened to Washington. General Funston, who was directing the troops from Market street during those hours, was in communication with his base and with Washington all the time, when a newspaper man could not get a message out of the city for love or money, and the city telephone plant was down and out."

Directory of Annual Meetings.

Association of Railway Telegraph Superintendents meets at Denver, Colo., June 20, 1906.

Commercial Cable Company meets the first Monday in March, at New York.

Gold and Stock Life Insurance Association meets the third Monday in January, at New York.

Great North Western Telegraph Company meets the fourth Thursday in September, at Toronto, Ont.

International Association of Municipal Electricians meets at New Haven, Conn., on August 15, 16 and 17, 1906.

Magnetic Club, business meeting, meets the second Thursday in January, at New York.

Old Time Telegraphers' and Historical Association meets at Washington, D. C., October 9, 10, 11, 1906.

Postal Telegraph-Cable Company meets the fourth Tuesday in February, at New York.

Telegraphers' Mutual Benefit Association meets the third Wednesday in November, at New York.

Train Despatchers' Association meets at Buffalo, N. Y., in June, 1906.

The stockholders of the Western Union Telegraph Company meet the second Wednesday in October, at New York; election of officers occurs on the third Wednesday in October.

No up-to-date telegrapher can afford to be without TELEGRAPH AGE. It furnishes him with information essential to his welfare. Send for a sample copy.

Special Government Report on Telephones and Telegraphs.

A report on the telephone and telegraph systems and the municipal electric fire alarm and police patrol systems of the United States has just been published by the Bureau of the Census. The statistics were collected and compiled under the supervision of Mr. W. M. Steuart, chief statistician for manufactures, and the text was prepared by Mr. Thomas Commerford Martin, of New York city, expert special agent.

This is the last of a series of reports on the generation and utilization of electric current for the transmission of power, messages and conversation. Former reports relate to street and electric railways, and central electric light and power plants.

This report presents statistics concerning the physical equipment, service and financial operations of the commercial and mutual telephone and telegraph systems of the country, and the physical equipment of independent rural telephone lines.

The statistics of the telegraph and telephone industries of the United States were first shown in the census of 1880. At that time telegraphy had been growing steadily for nearly forty years and telephony was in the formative stages of development. Since then, however, telephony has progressed to such an extent that it has surpassed telegraphy in physical and financial magnitude.

In 1902 the telephone systems operated more than three-fourths of the wire mileage reported for both telephones and telegraphs, gave employment to seven-tenths of the wage-earners, paid more than two-thirds of the wages, received more than two-thirds of the total revenue, and paid more than two-thirds of the total expenses.

The effect of the telephone in reducing or checking the amount of telegraph business is produced in two ways—by substituting the long-distance telephone call for the telegraph message between two widely separated points, and by obviating to a very large extent the necessity for using the telegraph within city limits.

The rates of the two systems for medium distances do not differ greatly, and for very long distances they are overwhelmingly in favor of the telegraph, if the message be taken as a unit; but if the number of words exchanged be taken into account as well as the time required for getting into communication, the telegraph is at a disadvantage in case of a large amount of traffic.

Frequently the brief message will suffice and the written telegram serves as a record; but where a swift interchange is required, the telephone seems to have thoroughly established its superiority for social matters and for business. The public employs the telegraph at the rate of only a little more than once a year per capita, whereas the number of telephone messages is already sixty-five per capita.

The telegraph systems are divided into two general classes—the commercial land telegraph and the ocean cable systems, including all systems or-

ganized primarily for the transmission of messages for the general public; and the railway telegraphs, including all wires owned and operated in connection with railway systems.

The commercial telegraph systems of the country owned and operated 1,318,350 miles of wire in 1902. In addition there were 16,677 nautical miles of submarine cable. The twenty-five systems had an investment, or capitalization of stocks and bonds of \$162,946,525; a total revenue of \$40,930,038; and total assets of \$195,503,775. A sum amounting to \$15,039,673 was paid in salaries and wages to 829 salaried employees and 26,798 wage-earners.

The railway telegraph systems were reported by 684 companies. They employed 30,336 operators and despatchers, to whom \$20,040,730 were paid in wages. The number of messages sent during the year for railroad business only was 201,743,756 and the number of commercial messages was 4,474,593.

The report contains an interesting chapter on the employment of the telegraph and telephone by the government.

It shows the statistics for the telegraph and telephone service of the signal corps in the United States, in the Philippines and in Alaska, and discusses the use of telegraphy and telephony in the work of the weather bureau and the life-saving service.

Harry H. White, Western Union Manager at Portland.

The appointment of Mr. Harry H. White to be manager of the Western Union Telegraph Company at Portland, Me., already announced in these columns, elevates to that position a man who through long years of loyal service in the office of which he is now the head, has proved his worth and capacity for executive control. Mr. White was born at Eastport, Me., in May, 1864. His entire telegraph experience has been acquired in the Portland office, covering a period of over twenty-two years, for after leaving school he learned the art of telegraphy while acting as night press messenger at this point. His first chance as an operator was given him on a press wire. During the years that have followed he has held every position in the operating room, and here it was that he made his record of faithfulness. He is thoroughly familiar with the business of his office, knows its customers and their telegraph requirements. His promotion exemplifies the very essence of the spirit of civil service reform, and is to be commended from every point of view.

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Wireless Telegraph Plans of the Wellman Polar Expedition.

M. J. Smith and C. J. Morley have gone to Europe to join Walter Wellman, who is preparing for an attempt to reach the North Pole in the largest airship ever built. Mr. Smith will be in charge of the wireless telegraph details, by which it is planned to keep in communication with cable stations. He will operate the apparatus in the airship during its flight. Mr. Morley will be in charge of a wireless station to be established on the Arctic steamship *Frithjof*, which will be anchored at Spitzbergen, while the airship is away. At Hammerfest, in Norway, which is a cable station, another wireless telegraph station will be established to communicate with the Spitzbergen station. Mr. G. A. Robinson, who has just completed a series of wireless experiments abroad with Lee De Forest, will be in charge at Hammerfest.

As many messages as possible will be sent to the *Frithjof* by Mr. Smith as soon as the airship leaves. Each of the messages, according to the plans, will give the exact latitude and longitude, so that the last location will be known should no messages be received after a certain time, when it will be fair to assume that some accident has befallen the ship. A special code will be used, intelligible only to the three operators. This is done to prevent the acceptance of spurious messages that might be sent from other sources and picked up by the stations either at Spitzbergen or Hammerfest.

Although messages will be sent under somewhat different conditions than have ever been attempted before, Mr. Smith expects the apparatus to work satisfactorily. He says: "The reason why the wireless system on the ship is going to be so much of an experiment is due to the fact that we will have to use the steel frame of the airship as an artificial ground. We shall be up in the air and we shall have to work downward. Instead of having a solid mast or anything of that sort, we shall have to drop our wires from the frame of the ship. Four long wires will be suspended, each 250 feet long. I am taking an alternating-current generator along, and this will be connected with the 55-horsepower gasoline motor, the larger of the two motors on the airship. All of these appliances I shall attach to the frame of the ship in Paris, to be forwarded with the big balloon itself to Tromsø, Norway, where the entire party will meet early in June. Mr. Morley will meet Mr. Robinson in London and accompany him to Hammerfest to assist in putting up the appliances there, and he will then join the polar party at Tromsø. Including mechanics, sailors and other workmen, there will be about thirty-five men in the party, but only five will go on the airship, the others staying at Spitzbergen, where quarters will be on Dane's Island.

Concerning other details of the trip, the *Chicago Record-Herald*, which is conducting the expedition with Mr. Wellman, says: "The French aeronaut,

Gaston Hervieu, who will be the pilot of the polar airship, will give Mr. Wellman and the other members of the party several lessons in flying through the air in ordinary balloons before they leave Paris, so that they may be accustomed to traveling at a considerable height above the earth. Mr. Wellman said before leaving New York for Europe that he hoped to get away from Spitzbergen on the trip to the Pole early in August. He wishes to try out his airship there, as it will not be tried in flight before reaching Spitzbergen. He believes the ship can be kept in the air from twenty to twenty-five days. He will carry 5,500 pounds of gasoline, enough for 140 hours' use at an average speed of twelve miles an hour. He hopes to reach the Pole in from two to seven days, according to the winds, and if he succeeds he will have sufficient fuel left to sail back to land and relate his experiences." In the meantime it is expected that Mr. Wellman will be in wireless telegraph communication with the civilized world throughout the entire trip.—*Western Electrician*.

The Art of Punctuation Easy to Learn.

Good printers work upon "style" which is not so much a science as a system. Few people can punctuate the most ordinary matter. Yet it is a gift easily acquired by common observation in the routine of daily life. A boy from school put to read copy in a newspaper office, by diligently watching the reader, can soon pick up the rudiments of the art. A good reader will contrive to dispense with as many commas as possible, for disjointed and involved sentences are an abomination.

In the early days it was the custom in provincial newspaper offices for the junior reporter to do the reading of news proofs, the editorial matter being first corrected by a regular reader and always revised by the editor himself. Under that system a reporter became a first-class all-round journalist. Under the modern stress of work and pressure of outside engagements the budding journalist does not get the same opportunities. But there is still some scope left him for self-improvement.

Unfortunately, the young gentlemen who now blossom into editors before they are out of their apprenticeship scorn the "drudgery" of proof reading. They consider it "infra dig" and, consequently, miss the valuable experience. It is not much use reasoning with them. Ease and luxury have greater charm than mental training. The result is that many journalists of to-day do not understand the elementary principles of an important branch of literature.—*Brighton (England) Gazette*.

"Pocket Edition of Diagrams," etc., the latest revised edition, 334 pages and 160 illustrations, published by TELEGRAPH AGE, contains just the information every telegrapher requires, irrespective of his position.

The Bucket Shop Evil.

In the July number of Everybody's Magazine a crusade is made against bucket shops in a strong article written by Merrill A. Teague, in which he says in part:

"Before I have finished I mean to make clear just how the bucket shop man captures and makes 'way with his swag of over \$100,000,000 a year—your money and your neighbors.' If you don't lose under regular market fluctuations you must be made to lose. Your regular broker wishes you to win that your trades may increase in number and volume. Your bucket shop keeper has no purpose other than to steal all the money you have, or can beg or borrow or steal, and when he has done this to steal the home that houses your family, to steal the dress your wife will need next year, to steal the food your baby will require as it grows.

"Yet, because the bucket shoppers simulate respectability, they are permitted to perpetuate their swindles with virtual impunity. The proprietor, operator or manager of horse-racing pool-rooms is under the ban of the law in nearly every state in the Union. The professional gambler sets up his outfit for poker, faro, roulette, monte and craps behind barred doors and drawn screens. The expert manipulator of three English walnut half-shells and a pea is chased from every county fair ground in the republic.

"But the bucket shop keeper goes his way almost unmolested. Banks solicit his accounts. Newspapers are eager to print his advertisements. Proprietors of office buildings importune him to become their tenant. The telephone and telegraph companies furnish him with every facility to thrive by theft. Regular exchanges seldom punish members who maintain 'underground' with the thieves of the bucket shopping class. And, as though the immunity they enjoy were not otherwise broad enough, the United States affords to the bucket shop thieves freest use of the mails, albeit investigation by postal inspectors would invariably show up the fact that such use of the mails is fraudulent."

In conclusion Mr. Teague says: "Bucket shopping should be suppressed, or placed at par with the poolroom and the poker or crap joint before the law of every state in the Union. The bucket shop keeper should be hunted by police, secret service and county officers, with the same relentlessness which is shown in the chase of the professional card-sharper, the green goods operator, the bunco-steerer, the confidence man, the poolroom proprietor and manager, the pickpocket, the safe-cracker and the porch-climber."

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General Mention.

Edwin Emerson, Jr., of New York, and Miss Edith Griswold, of Oakland, Cal., were married May 16 at the home of Mrs. Robert Louis Stevenson, of that city, the proposition and acceptance of the offer of marriage being made by telegraph.

Mr. George W. Jackson, identified with the telegraph for the past twenty-three years at Rochester, Washington and Buffalo, has become associated with "Spare Moments," published at Rochester, N. Y., as circulation manager of that journal.

The McGraw Publishing Company has purchased property on West 39th street, New York, upon which will be erected an eight-story structure, which will be the home of the Electrical World and other publications controlled by this company.

Mr. George M. Dugan, formerly superintendent of telegraph of the Illinois Central Railroad at Chicago, in a recent letter to this journal, writes: "Notwithstanding I am on the superannuated list, I always read Telegraph Age with a great deal of interest." Mr. Dugan is now residing on his farm at Tip Top, Ky.

Submarine Bell Signaling.

A paper describing this system was read before the Society of Arts, London, Eng., on May 11, by Mr. J. B. Millet, who for some years past has been devoting his best energies to the matter. Sir William H. White, who presided, expressed his unqualified approval, and mentioned that so important is it as an aid to navigation in thick weather, that owners of ships provided with the apparatus do not fail to mention the fact in their advertisements to attract passengers. All important lightships on the North American coast are provided with the submarine bells; before long German lightships in the North Sea are to be similarly equipped, and our own Trinity House has recently made exhaustive experiments with, we are informed, most satisfactory results, and there is little doubt that this new method of communication will be largely adopted in the future, not only for the purpose of guiding ships in thick weather, but also for the passing of actual messages. There is nothing new about the system, and the discussion brought to light other workers who were in the field earlier than Mr. Millet, though not one of them appears to have appreciated the practical utility of the system. It seems that the vibrations of a bell weighing only a few pounds, but of somewhat peculiar design, when struck under water are easily and unmistakably audible over distances of ten or twelve miles with the help of a microphone placed in a tank of water joined to the skin of a ship below the water line and connected with telephone receivers placed in a convenient position on the bridge, while

with proper tuning even thirty miles is within the bounds of possibility. Unlike air, water is a very reliable medium, and plays no tricks, so that it may be expected that it will be found more suitable for short-distance communication than any other medium—ether included.

While listening to the paper it occurred to us that it would be very convenient if the buoys used by telegraph repairing ships could be provided with bells placed under water and struck automatically by some simple means. A ship fitted with the receiving apparatus, as arranged by Mr. Millet, would then be able to find the buoys without much difficulty in foggy weather and repairing operations in certain localities might be considerably facilitated. —London Electrical Review.

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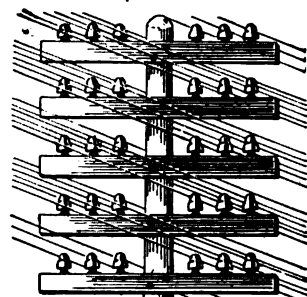
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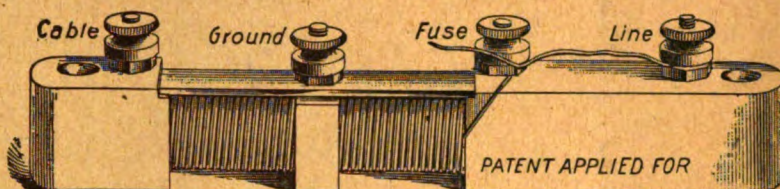
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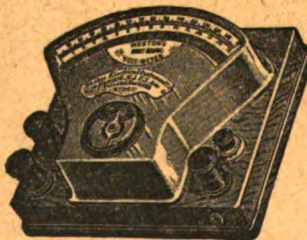
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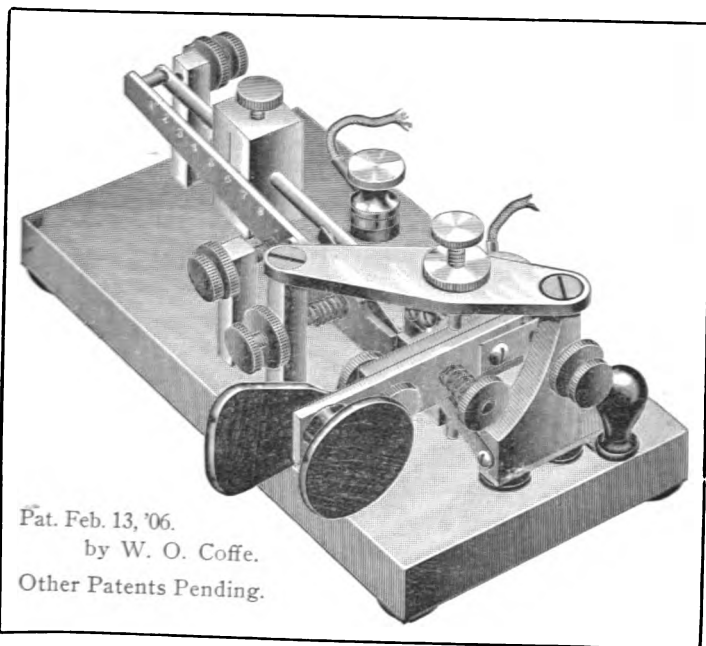
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SOME POINTS ON ELECTRICITY.

Influence of Weather on "Static."—An Electrical Phenomenon.

BY WILLIS H. JONES.

Mr. F. R. Veale, of Richmond, Va., requests the opinion of this journal regarding the two questions asked in the following letter:

I have recently run across one or two things electrical on which I would like to be enlightened. If, through *Telegraph Age*, you can give me the desired information, I will appreciate it. First: Has a well insulated wire of given size and length a higher static capacity than a poorly insulated wire of like dimensions? I have always understood that the wires in cables have a much higher static capacity than open ones, yet I am told that on wet and heavy days telegraph wires possess more static than in more favorable weather. Second: In this office where the 3-wire system of lighting is used, I note that there is invariably a collection of dust on the ceiling directly above the positive and negative leads and that that portion of the ceiling over the neutral wire is always clean. Of course, it is easy to see why this condition should exist in the main circuit, but I cannot see why it should also be true in the branch circuits where only two wires are used, either positive and neutral or negative and neutral. The current which flows out on one wire must surely return on the other, and where the negative and neutral leads are used the neutral must necessarily act as positive until the main leads are reached again. Am I correct in my understanding and will you kindly explain the phenomena?

Replying to the first question of our correspondent we will state that the perplexity concerning the facts in the case is probably due to the necessity in having to readjust the condensers on multiplex circuits to meet the requirements of effects produced through alterations in weather conditions. The natural conclusion, therefore, obtains that the static capacity of a conductor varies in degree as a result of such alterations. This is not true, however, the static charge is simply distributed in a different manner, and for that reason causes a stronger or a weaker recording effect on telegraph apparatus under one condition than another.

The highest authorities agree that the "static" capacity of a conductor is a fixed quantity and unalterable under a given potential. Leakage, however, allows a portion of the static charge to escape to the earth, hence that part does not manifest itself in the recording apparatus. The static is the same in all weather. In wet weather we seemingly have less because some of it flows to the earth.

Some insulating compounds apparently impart to a conductor a greater static capacity than others. This is due to absorption, or a minute storage effect, particularly noticeable in gutta-percha and to a less degree in paper; but take any given conductor, permanently located, the static capacity is unvariable, but the manifestations of such capacity vary directly as the insulation of the conductor.

Concerning the second question the source of the phenomenon mentioned has yet not been disclosed to us conclusively.

A letter from Mr. Francis W. Jones, electrical engineer of the Postal Telegraph-Cable Company, New York, shows how difficult a solution of the question really is. The phenomenon is apparently a rarity, but few having observed it. One inspector for many years employed by the Edison Electric Light Company in reply to our request for information on the subject remarked that in all his experience he had never even seen such a thing. Still we know that the phenomenon is real. (This was written in the original). Here is Mr. Jones' letter:

In reply to your favor I beg to say, that I remember publishing in *Telegraph Age* a long time ago, something upon this subject, for the purpose of eliciting information from practical electricians and telegraph men. I find that certain switchboard rows of discs, which are connected with dynamo machines, are coated more heavily with some dust, or other particles, from the air than are other rows similarly situated, and I found at the time, where there were several 50-wire

switchboards, side by side, that a horizontal row in one board connected with a plus current, would be thus affected, but a horizontal row in some other switchboard connected to the same machine, would not be affected, but that in such a board, the row of discs upon the same horizontal plane connected to the minus pole, would be affected in the same manner as another board whose similar row of discs were connected to the plus pole. I called the attention of some eminent electrical engineers to the matter at the time, but have never succeeded in securing an explanation that I was able to grasp.

In regard to the three wire phenomenon the most plausible explanation as to why the ceiling above the neutral conductor of the mains only remains clean, while the portions above the neutral and the positive conductors in both the main and the office branch leads collect dust, is that the well balanced neutral conductor does not carry a sufficient volume of current to cause that degree of electrification therein that obtains in the other conductors. A highly electrified conductor seems to collect dust and hold it in bondage, while dust that is free from electric influence, or at least, insufficiently influenced, drops from the ceiling in the usual way owing to the vibrations of the building. Possibly some of our readers may be able to suggest a better explanation of the phenomenon. If so we shall be pleased to receive it.

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, Inc.; June 1 to July 16, Inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, Inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, Inc.; The Barclay Printing Telegraph System, May 16; Polarised and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power From the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16; The Dynamo—Series, Shunt and Compound Wound, Feb. 1-16, March 1; The Storage Battery, March 16-April 1-16-May 1-16; A New Double Loop Repeater—Comparative Efficiencies of a Polar and a Neutral Relay, June 1.]

Orders, if sent to Telegraph Age, Book Department for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

Business Notices.

The Mecograph Company, of Cleveland, O., announces in this issue a further improvement in their transmitting device. These people are progressive and alive to the needs of operators of all classes. They invite correspondence, both with themselves and with users of their instruments.

Messrs. W. R. Ostrander & Co., manufacturers of electrical supplies, of 22 Dey street, New

York, are distributing a pamphlet on electric fans, illustrated and with price list. This should serve as a timely notice, for what renders a more grateful service during the warm months than an electrical fan? Copies of the pamphlet will be sent on application to any one who may be interested.

Another important industry has been added to the many existing at Rochester, N. Y., where a factory has been established for the manufacture of a new style of telegraph signal and its co-ordinate circuit protecting appliances. The new apparatus is especially adapted for use on single track railways. The device is connected directly into the despatchers' circuit and instrument in such a manner that, so long as it is not necessary to use it as an emergency signal, the working of the despatchers' circuit is normal. Similar instruments are placed in the circuit at each telegraph station. By means of a "selector," the despatcher is enabled, from his office, to throw both the east and west, or the north and south bound semaphores, or either, to indicate danger. In connection with a disk similar to a messenger call, the despatcher is advised when one or both semaphores are in "stop position." The semaphore appliance is strictly interlocking, and semaphores remain "at danger" until placed "at safety." An additional feature is that despatchers can, at will, ring a bell in the office at a way station, and, if desirable, another bell in series at the room or home of the operator, in cases where the station is not a night office, thus calling attention to conditions. In case the operator should be absent from his station, or if his key remains normally closed, or has been inadvertently left open, or in case the operator should become disabled or sick and his key be left open, then, by means of the signal apparatus, the despatcher can still throw the semaphore or semaphores to "stop position" and ring his bell, or series of bells, just as he could if the operator were at his desk and his key closed. This apparently paradoxical effect is produced by a simple appliance, by which a short-circuiting effect is produced on the key at the station where the key is inadvertently left open. A falling ball is so arranged as to short-circuit that particular key, this being a normal effect of the operation of the signaling device by the despatcher. The addition of this telegraph signal apparatus to the despatchers' circuit does not involve, at any stage, an increase of electric energy on the despatchers' line.

PATRICK B. DELANY.

Mr. Delany was born in Kings County, Ireland, January 28, 1845, and came to America when nine years of age. He learned telegraphy at Hartford, Conn., and was a good operator at the age of 16 years. He held the position of press operator at Worcester, Mass., at the age of 18. It was during this period that Mr. Delany made his reputation as an operator, espe-

cially as a "receiver," and his wonderful ability to copy press twenty to twenty-five words behind the sender. In 1865, Mr. Delany was appointed night circuit manager at Albany, for all the wires between New York and Buffalo. He afterwards became chief operator of the Franklin Telegraph Company, at Philadelphia, Pa., assistant general superintendent of the Southern and Atlantic Telegraph Company, and superintendent of the Automatic Telegraph Company.



PATRICK B. DELANY.
Technical Adviser of the Delany Telegraphic Transmitter Company,
New York.

Giving up telegraphy, Mr. Delany became a newspaper correspondent at Washington, and subsequently editor of the *Harrisonburg, Va., Old Commonwealth*. Having in the meantime made several important inventions in telegraphy, he, in 1880, turned his attention to inventing, and has followed it almost exclusively ever since. Over one hundred patents have been granted to him, comprising almost every branch of electricity, but mainly in telegraphy. Among the most prominent may be mentioned his anti-Page relay, anti-induction cables and synchronous multiplex telegraphy. This multiplex system was adopted by the British postoffice in 1885, and is now in use in the United Kingdom.

For some years he devoted himself to cable telegraphy and has perfected several forms of transmitters, automatic and manual, which increase materially the speed of sending.

His greatest work is his rapid automatic system, by which 1,000 words or more per minute can be sent on one wire.

For the past year or so Mr. Delany has been giving special attention to telegraphic transmitting devices. He has perfected keyboard machines for all branches of Morse telegraphy, land lines, cables, and wireless. He has invented automatic dot-making devices, both mechanical and electric.

In order to handle these inventions there has been organized the Delany Telegraphic Transmitter Company, with offices at 20 Broad street, New York, of which Mr. Delany is the technical

adviser and Mr. George W. Conkling general manager.

GEORGE W. CONKLING.

George W. Conkling, of New York, recently appointed general manager of the Delany Telegraphic Transmitter Company, is recognized as one of the best all-around telegraphers in the United States and holder of the championship for code sending for a number of years past. He has also been winner of numerous other prizes, besides having the honor, conceded by all members of the fraternity who know him, of being one of the most beautiful Morse senders of to-day, and was awarded in consequence a silver loving cup in a Philadelphia tournament in 1903. He is a man of fine capabilities in an executive or managerial capacity.

He was born at Mountindale, N. Y., on December 22, 1871. At the age of fifteen he learned telegraphy on the West Shore Railroad and soon became master of the dots and dashes. He worked on several railroads in telegraph and dispatchers' offices until 1890, when he went with the Postal Telegraph-Cable Company at its old office, 187 Broadway, New York, where he soon became known as a fast operator with the key and a copper-plate pen receiver; he was made one of the fast quartette on the Boston quadruplex, where he remained for a year and a half. Having become master of the typewriter and the Phillips Code, Mr. Conkling was next employed by The United Press. In 1898 Mr. Conkling went into the financial district, New York, and has since been working for brokers, where he has a wide



GEORGE W. CONKLING.
General Manager of the Delany Telegraphic Transmitter Company,
New York.

circle of friends. Mr. Conkling has been educated in all branches of the telegraph, railroad, commercial, broker, poolroom, a little cable and wireless, and is considered an authority on a great many matters of interest to telegraphers. Possessed of a clean record and, before everything else, an operator, he can be expected to deal justly and liberally with all members of the craft.

Personal Mention.

Mr. M. W. Rayens, general manager of the United District Messenger Company, New York, was recently seen in the Berkshire Hills, where he spent a brief vacation.

Mr. P. B. Delany, the well-known old time telegrapher and inventor, who is spending the season at his summer home on Nantucket Island, Mass., was in New York a few days since on business.

Dr. A. D. Campbell, of Cleveland, an old time telegrapher, prominent in the seventies as a knight of the key, now a member of the medical profession in the Forest City, accompanied by his son, recently passed several days in New York.

Mr. Robert Pitcairn, resident assistant to the president of the Pennsylvania Railroad Company, Pittsburg, Pa., was retired on a pension on June 1. Mr. Pitcairn was born in Scotland in 1836, and his entire railroad service has been on the Pennsylvania. He began life as a telegraph operator in 1853.

Mr. J. H. Shearer, division operator, Pennsylvania Railroad Company, Elmira, N. Y., was in New York recently, and was a caller at the office of TELEGRAPH AGE. This is his forty-second year in the employ of the Pennsylvania Railroad, and he promises to be in attendance at the convention of the Old Time Telegraphers' and Historical Association at Washington in October next.

It was a pleasant incident that determined the whereabouts recently, each to the other, of two oldtime telegraphers who had not met since the days of young manhood, over fifty years ago. It appears that Mr. W. A. M. Grier, a retired banker, now a resident of Brooklyn, New York, taught telegraphy to Mr. Thad. M. Schnell, at Bellefonte, Pa., in 1851, and now of the Western Union Telegraph Company at Omaha, Neb. Through the casual influence of TELEGRAPH AGE an interchange of letters has recently passed between the two gentlemen and a renewal of friendly intercourse effected. Dipping into politics somewhat, it appears that Mr. Grier was a delegate from Pennsylvania to the Republican convention at Chicago in 1880, which nominated Gen. Garfield for the Presidency, a result due to Mr. Grier's persistent vote, an influence which finally led to Garfield's nomination. Afterwards President Garfield, in recognition of Mr. Grier's loyalty, tendered him the position of Third Assistant Postmaster General, an office which was declined, however.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Col. Robert C. Clowry, president and general manager of the company, accompanied by Mr. and Mrs. H. D. Estabrook, arrived home on the Celtic on the 10th inst. The Colonel spent most of his brief holiday at London and Paris, and while abroad was the recipient of much attention.

The day prior to his sailing on his return voyage, he was entertained at luncheon by Ambassador Whitelaw Reid at London, at which function Andrew Carnegie and other prominent people were present.

His return was signaled in a most delightful manner on the evening of Monday, June 11, when the officials of the company tendered him a dinner at Sherry's. The affair, which was characterized by an earnest expression of good fellowship, spoke eloquently of the warm regard in which the Colonel is held by those who are associated with him in the management of the great property of which he is the head.

Besides the guest of the evening, the other invited guests to the dinner were: George J. Gould, Judge John F. Dillon, Gen. Thomas T. Eckert, H. D. Estabrook, J. B. Van Every, John C. Barclay, Rush Fearons, Thomas F. Clark, B. Brooks, G. H. Fearons, A. R. Brewer, M. T. Wilbur, Charles Trippe, G. W. E. Atkins, J. C. Willever, E. M. Mulford, F. J. Scherrer, G. F. Swortfiger, P. J. Casey, M. W. Hamblin, C. F. Patterson, William Holmes, H. E. Roberts, A. G. Saylor, W. J. Dealy, C. H. Bristol, I. B. Ferguson, Theodore P. Cook, of Chicago; Jacob Levin, of Atlanta, and Isaac McMichael, of Toronto. T. W. Goulding, of London, Eng., and Frank Jaynes, of San Francisco, were also invited, but were unable to be present.

Among the recent executive office visitors were: Mr. Isaac McMichael, vice-president and general manager of the Great North Western Telegraph Company, Toronto, Ont.; Mr. T. P. Cook, general superintendent, Chicago, Ill., and Mr. Jacob Levin, general superintendent, Atlanta, Ga.

Belvidere Brooks, Jr., and Bruce Brooks, sons of Belvidere Brooks, general superintendent of the Eastern division, will sail for Europe, together with a companion, on June 23, to be absent three months.

Mr. Fred O. Miller, secretary and son of Mr. I. N. Miller, superintendent at Cincinnati, O., was in New York last week, the guest of Mr. Ralph E. Bristol, of the general superintendent's office. Mr. Miller was en route to Boston to participate in his class reunion, he being a graduate of the Boston Institute of Technology.

Mr. George H. Fearons, general attorney of the company, accompanied by his wife, sailed for Europe on June 12.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

Mr. Charles P. Bruch, assistant general manager, Mr. Francis W. Jones, electrical engineer, and Mr. George H. Usher, superintendent, have returned from a trip to Baltimore and other points, whither they had been in the interests of the service.

Among the recent executive office visitors was Jesse Hargrave, assistant electrical engineer of the company at Atlanta, Ga.

On May 29 this company occupied its new main office at Atlanta, Ga. A. M. Beatty is the man-

ager; J. H. Twyford being the chief operator, and A. D. Holcomb night chief. The equipment of this office, which is first class and up-to-date in every respect, consists of nine motor generators, four quadruplex sets, six duplexes, one phantoplex circuit to Birmingham, twelve single sets, six sets of repeaters and ten lamp annunciators for city wires. The work of installation was done by A. Kent and Thomas Neelon, foremen, under the direction of Assistant Electrical Engineer Hargrave. Atlanta is not a relaying office; the relaying points for this district being Birmingham, Ala., and Augusta, Ga., which are more centrally located and therefore better adapted to the requirements of this branch of the service.

The Cable.

United States Consul Pierre P. Demers sends from Baranquilla, Colombia, a copy of a cable concession recently granted by the Government of Colombia to Francisco J. Fernandez, a native of that country, which concession has been accepted and ratified by the Colombian Legislature. The merchant of the coast must now send his messages overland on the national telegraph lines to Buenaventura on the Pacific side via Bogota, a distance of nearly 1,500 miles, or almost that from Savanilla to New York. This is not only very expensive, but extremely uncertain, and frequently involves delays of from three to five days. It is the intention of the present owner to sell his privilege or develop it with foreign capital. The French Cable Company, operating in Venezuela, is considering a proposition made by the grantee of the concession. The concession includes also the exclusive privilege of erecting wireless telegraph stations within the jurisdiction of Colombia. In that respect Savanilla, the seaport of Baranquilla, offers unusual advantages for the erection and successful operation of a wireless station. Stations are already established in Colon, a little over 300 miles from Baranquilla, Bocas del Toro, Port Limon, Bluefields and many other ports of the West Indies. The government guarantees, it is said, an interest of seven per cent. on practically all the capital invested.

The fleet of the Eastern Telegraph Company, Ltd., has been increased by the launch recently of the cable steamer Sentinel, at Paisley, Scotland. The vessel is designed and equipped for work of a special character. A cable steamer for the Western Telegraph Company will soon be launched at the same place.

Consul-General J. P. Bray reports from Melbourne the termination of the agreement between the Government of Australia and the Eastern Extension Telegraph Company. The latter declines the proffered extension of privileges to 1915, falling back on the separate agreements made with the states of New South Wales, South Australia, Western Australia and Tasmania prior to the establishment of the commonwealth. These allowed the company for all time to carry on a cable business in the states named. The company has

therefore closed its Melbourne and Brisbane offices and will in future transact its Australian business under the agreement with the states named.

At the annual meeting of the Mexican Telegraph Company, held in New York June 5, John W. Auchincloss was elected a director in place of William J. Hamilton. The other directors were re-elected.

Mr. Michael Fitzgerald, who up to six years ago was superintendent of the New York and Hayti Cable Company, a man well known in telegraph and cable circles, and for many years connected with the French Cable Company, at Orleans, Mass., from which he retired last fall in order to obtain much-needed rest, is now quietly living the simple life, as he puts it, at a Cape Cod farm, at East Brewster, a point within easy hail of Orleans. In this secluded retreat Mr. Fitzgerald has abundant opportunity to commune with nature as exemplified on that long, narrow stretch of land; to study the native in all of his original picturesqueness of character, and to receive the strenuous attentions of the local type of mosquito.

Cables interrupted June 13, 1906:

Venezuela	Jan. 12, 1906.
Messages may be mailed from Curacao or Trinidad.	
French Guiana,	Apl. 20, 1906.
Mail from Paramaribo.	
Pinheiro, "via Cayenne,"	Aug. 13, 1902.
Dominica,	June 9, 1906.
Messages will be forwarded from neighboring islands as opportunities offer.	

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Miss M. J. Dunigan has been appointed manager at Kittanning, Pa., vice B. G. Shoup, resigned.

Mr. D. F. Cason has been transferred from the managership of the Dothan, Ala., office to a similar position at Pensacola, Fla., relieving Mr. L. LeBaron, who has been manager of this office for the past twenty years, and now retires from that branch of the service. Mr. Cason has been in the telegraph service for the past fifteen years, beginning with the Postal as messenger at Augusta, Ga., afterwards serving in the capacity of clerk, operator and office manager at various points; for the past three years as manager at Dothan, Ala.

Mr. U. W. Boggess, manager at the Milwaukee Chamber of Commerce for the Chicago and Milwaukee Telegraph Company, has been appointed manager at Clarksburg, W. Va., vice J. C. White, resigned. Since 1872, when he first entered the telegraph service, Mr. Boggess, who is a man of excellent executive ability, has had a varied and successful experience as a commercial, railroad and press operator, serving in various

parts of the country. His connection with the Chicago and Milwaukee company covered a period of sixteen years. In going to Clarksburg he returns to his native state, and near to his place of birth.

The following change has occurred in the Postal Telegraph-Cable Company's service:

Mr. W. A. Frazier, for many years, and until a few months ago, manager of the Helena, Mont., office, has been reappointed manager at that point, succeeding F. D. Nash, resigned.

Standard Time.

It is safe to say that it is owing to the railways that we have that time-keeping arrangement all over this continent which is called standard time. The circumference of the earth is, at the equator, roughly speaking, 25,000 miles, and as the earth turns on its axis once every twenty-four hours, it follows that the sun sweeps over about 1,041 miles every hour. One degree of the great equatorial circle of the earth is a little over sixty-nine miles long, and, at the rate of revolution just stated, about fifteen degrees pass under central solar beam every sixty minutes.

As arranged in North America, the 75th meridian of west longitude has practically been made the one from which the other distances involved in the standard time scheme are measured. The 75th meridian time is Eastern standard time. This meridian passes close to Philadelphia, and is near enough to New York, Washington and Ottawa to make a very satisfactory time reckoning basis for those cities.

Central standard time is that of the meridian fifteen degrees further west, which is the 90th, and this line passes through New Orleans and is a little west of Chicago. Fifteen degrees further on is the 105th meridian, which gives Mountain standard time. This is practically the time of the city of Denver, Col., and the name "Mountain" may have been chosen on account of the proximity of the Black Hills of Wyoming; also such mountains as Longs Peak, the Big Horn, and other broken spurs of the Rocky Mountain chain in Colorado. The 120th meridian gives us Pacific standard time, and this imaginary line passes through the centre of British Columbia and the States of Washington, Oregon and California.

Coming again to the Atlantic seaboard, the 60th meridian west from Greenwich, the time of which is four hours slower than London, is called Colonial time. The meridian passes through the Gulf of St. Lawrence, between Newfoundland and Nova Scotia, and though it gives the time for some of the points in the maritime provinces of Canada, it does not pass over any land. Eastern time is five hours slower than that of London, and Pacific time is eight hours slower. The standard system of time-reckoning is such that points seven and a half degrees east or west of a standard meridian use the time of that meridian. In 1883 the railways of the United States and Canada adopted the standard time system, and in

addition to this, the Intercolonial Railway, and the lines west of Fort William, on the Canadian Pacific, have used the twenty-four-hour system for a number of years.

Standard time was introduced into India at the beginning of this year, and the prejudice incident to any new departure in that ancient land is being gradually overcome. In fact, the British Government is doing very well in this regard, when it is remembered that in that vast Empire there are one hundred and forty-seven distinct vernacular languages, and the immense population has never been accustomed to scientific modes of thought. The British Empire, as it stands to-day, comprises one-fifth of the earth's surface, and includes more than 400,000,000 people. Outside of the United Kingdom itself, India has a greater number of persons to the square mile than any other portion of the British Empire.

Standard time for India is five hours and thirty minutes faster than that of Greenwich, being nine minutes faster than Madras time; about twenty-four minutes slower than Calcutta time, and about thirty-nine minutes faster than Bombay local mean time.

Five hours and thirty minutes faster than Greenwich time is local mean time for longitude 82 degrees 30 minutes east of Greenwich. This meridian passes through India at about the eastern mouth of Godavery river, in the Bay of Bengal, and is near Benares, the sacred city of the Hindus, on the Ganges river. It is, roughly speaking, the center of the country, just as the 90th meridian west is with us. The time of this meridian, eighty-two and a half degrees east of London, is the meridian that now sets the standard time for all India.—Railway and Locomotive Engineering.

First Newspaper Telegram.

The first newspaper in England, according to "Stray Stories," to receive the first telegraphic news report was the London Morning Chronicle, May 8, 1845.

During the railway mania of 1845 a meeting of considerable importance was convened at Portsmouth, England, to take into consideration the respective merits of the proposed lines from London. A great desire existed to know the result of the meeting, and as it was not to take place at Portsmouth until after the last London train, recourse was had to the telegraph.

A full report of the meeting, headed "Portsmouth Lines, communicated by electric telegraph," appeared in a London paper next morning. The editor called attention to the fact in the leading column as follows:

"In our article on railways will be found a report of a meeting held yesterday evening at Portsmouth which was transmitted by electric telegraph. This is the first example of the electric telegraph being used for such a purpose, and it indicates the important and numerous services which that valuable invention will soon render to the public."

The Railroad.

The Mexican Central Railway, under the superintendency of G. O. Perkins, is experimenting on its lines with simultaneous telegraphy and telephony.

A patent, No. 820,529, for an automatic train reporting system, has been awarded to Elmer E. Steiner, Knightstown, Ind. Depressible tappets are provided at points along the track so as to be engaged by specially constructed shoes carried by the train. The latter have a plurality of projecting lugs spaced in a special and predetermined way for each train so as to give a distinctive signal when passing over the tappets.

Because of the enactment by the Maryland Legislature reducing the length of the working day to eight hours, the Pennsylvania Railroad has accordingly reduced the wages of its signal-tower telegraph operators in the state twenty per cent., thus bringing the monthly payment of \$55 down to \$44; and the Baltimore and Ohio Railroad Company has also reduced the pay of its operators by twelve per cent. in order to offset the provisions of the eight-hour law.

A patent, No. 822,168, has been issued to Eugene W. Vogel, of Chicago, which covers every possible form of a bonding or channel pin such as used in electrical signal construction. These pins are tinned or galvanized. Up to within about six months ago, all channel pins to prevent them from rusting and to insure a good contact, were copper plated. It was found that the bond wires always broke off where same was in direct contact with channel pin and rail. It has always been assumed that this was due to ordinary processes of rusting. Mr. Vogel discovered by thorough investigations and tests, which covered a long period of time, that as a matter of fact, it was electrolysis which ate off these wires electrically where they entered the rail. This was due to the fact that the copper plating of the channel pins and the zinc coating or galvanizing of the bond wire formed a combination with the damp atmosphere, making a miniature battery, and would slowly but surely eat the bond wire in two. To overcome this, it was necessary to have the channel pin coated with a metal which is approximately the same contact potential as the bond wire. Tinned channel pins have now been in use for about two years, during which time no cases of electrolysis have been found, whereas with the copper plated channel pins this trouble was frequent and bond wires would last but a very short time. The tinned channel pins have always been recommended by the official organization of signal engineers, the Railway Signal Association.

Obituary.

H. L. Goodman, forty-one years of age, identified with the American District Telegraph Company at Philadelphia, Pa., died on May 30.

Richard M. Simpson, aged twenty-three years,

wire chief of the Western Union Telegraph Company at Dubuque, Ia., died on June 1.

Charles O. Brigham, aged seventy-one years, up to five years ago and for the previous forty-five years, chief operator of the Western Union Telegraph Company at Toledo, O., died recently.

James F. Malone, aged forty-eight years, one of the leading telegraph operators in the service of the old United Press and The Associated Press, died suddenly at New Haven, Conn., on May 27.

The death is reported of Milan R. Hulst, aged forty-eight years, for many years prominent in New York telegraph circles, and at one time manager of the Western Union Telegraph Company at Bridgeport, Conn. Mr. Hulst was also prominent at one time in the conduct of outside electrical enterprises, which were successful.

J. Coleman Wilson, who died in Indianapolis, Ind., recently, was a telegraph operator years ago, and during the war of the rebellion was employed by the Western Union Telegraph Company in that city. Mr. Wilson began his telegraph career as a messenger boy in 1852 with the Ohio, Indiana and Illinois Telegraph Company. This concern afterward consolidated with the United States Telegraph Company, which for several years was the only company in Indianapolis. The United States company in 1865 was absorbed by the Western Union. Mr. Wilson and John F. Wallick, now superintendent of the Western Union company at Indianapolis, worked together in the old days. There were strenuous times for the telegraph companies during the rebellion—the days of the cipher despatch. During the war the Western Union Telegraph Company had its offices at Meridian and Washington streets. There were not many operators in Indianapolis those days, and few of the men who worked for the Western Union in Indianapolis in war times are there now. For several years Mr. Wilson was stationed at the Union depot, where he handled the business for the Western Union and the Pullman Car Company. In 1848 a telegraph company was established in Indianapolis, which was the first opportunity the people had of using such service. Superintendent Wallick has the cash books used by this company. The books show that the first day's business netted the company thirty-five cents. As a striking comparison, Mr. Wallick says the business of the Western Union in Indianapolis now aggregates from \$300 to \$500 a day.

Mr. J. J. Corrigan, chief operator of the Scripps-McRae Press Association, Cleveland, Ohio, in renewing his subscription states: "As I have not missed a copy of your paper since Brothers Taltavall and Mitchell entered the journalistic field in 1883, I surely can see no reason for discontinuing. Enclosed find check for another year."

You can't afford to be without TELEGRAPH AGE.

Congressman Smith on Postal Telegraphy.

A speech for government ownership of the telegraph was made in the House May 26 by Representative Samuel W. Smith, Republican, of Michigan. He said in part:

"We should have a first-class postal telegraph in the United States in connection with our splendid postal facilities, and the rates can be reduced at least one-half, leaving a sufficient amount to dispose of the deficit, and have money left to extend the rural service to practically every home and pay the city and rural carriers a compensation fitting their services and expenses. In fact the surplus could be used in many ways to the great advantage of the general public."

"In these days of rate making and state making," he said, "I would like to invite your candid and careful consideration to the success of postal telegraph and to the arbitrary and exorbitant telegraph rates that we are paying in this country. I maintain that it is the duty of the Government, under the Constitution, to establish a postal telegraph system."

"Gardner G. Hubbard, than whom there was no higher authority on the subject of the telegraph and its relations to the government, used these words, 'That Congress had no more right to delegate the power of transmitting intelligence than the power to coin money or declare war.'"

"The first telegraph line was built between Washington and Baltimore by a Congressional appropriation of \$30,000, and the telegraph belonged to the government from 1844 to 1847, when, under mistaken notions of economy, it was turned over to private ownership. Of the public men who earnestly protested against this course were Henry Clay, the great Whig leader, and Cave Johnson, the Democratic postmaster-general."

"Had the prophecies of Professor Morse and the appeals of such men as Clay and others been heeded, the people of this country would be enjoying the telegraph even to greater degree than the people of the Old World and millions would have been saved instead of going into the coffers of an odious monopoly."

Tracing the growth of the telegraph monopoly, he concluded:

"It was the late lamented Senator Platt of Connecticut who used this language: 'The telegraph is the rich man's mail.' Let us hasten to give the people, rich and poor, learned and unlearned, in all walks of life, a blessing commensurate and co-extensive with that which was given to the farmers of the nation by the free delivery of the mails, the greatest boon that has come to them since the birth of the Republic."

"I hope to have said something to enlist of every lover of manhood, justice and fair play for lower telegraph rates."

Those who contemplate subscribing for TELEGRAPH AGE, and who would first like to inspect a sample copy, should not fail to write for the same.

At the Morse Statue.

Editor TELEGRAPH AGE:

While seated with my wife opposite to the Morse statue in Central Park on Decoration Day, watching the crowds of pleasure seekers and sight-seers as they passed to and fro before us, a young lady with her escort stopped to admire the floral display which adorned the monument of the inventor of the telegraph. The words of the historic first message were conspicuously wrought in immortelles on the base of the monument. "What Hath God Wrought," the young lady read musingly aloud. "You can search me," was the young man's laconic reply.

Recovering from the surprise and laughter occasioned by this incident, I said to my wife: "Half the people, apparently, don't know what that inscription means." I had scarcely finished the remark when a party of ten or a dozen young people of both sexes gathered in front of the monument, and after scrutinizing it intently for a few moments one of the young men with the dignity of a leader beating time with his arms, in sonorous tone read: "What Hath God Wrought." "What's the answer?" promptly inquired one of his serio-comic companions.

After a few minutes along came two young fellows who had evidently been doing a little "interior decorating" themselves. They were in a jolly mood and out for a good time, no doubt. Halting in front of the monument, one of them, bowing very reverently, sung out: "Old Morsey! Well, well, and they've got him decorated. 'What Hath God Wrought.'" he read. "Why, the old man was ashamed of his job and wanted to put it up to the Almighty." "Do you blame him?" replied his exhilarated friend. Then both of them bowing very low, with hats in hand, passed on with a final salute of, "By-by, Morsey."

A very interesting and pretty exhibition of juvenile education took place when a party of ladies and gentlemen were discussing the significance of the inscription on the tomb. None of them appeared to understand it, when a little boy, apparently about twelve years of age, jumped from his seat on a near-by bench and approaching the party, said: "I can tell you what that means: it's the first message ever sent over a telegraph wire." A chorus of voices exclaimed, "Good boy." I did not see the size of the tip the little fellow received, but he hung around for a considerable time, apparently eager to enlighten the uninformed.

New York, June 2.

A Telegrapher.

Mr. E. W. Collins, superintendent of the Postal Telegraph-Cable Company, Cleveland, Ohio, in a recent letter, states: "I do not know of any other \$1.50 investment which pays so much in monthly dividends as a subscription to TELEGRAPH AGE, and consequently it is a pleasure to remit."

Telegraph Age.

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NEW YORK, JUNE 16, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientele. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The Military Telegraphers' Pension Bill in the House.

Mr. F. A. Stumm, of New York, who has been enthusiastic in advocating the passage by Congress of the bill seeking to relieve the military telegraphers who served the government in the army during the Civil War, by placing this body of men upon the pension list, has received the following letter from Cyrus A. Sulloway, chairman of the Committee on Invalid Pensions in the House of Representatives:

Your letter to hand. Will say in reply that while I appreciate the great services the telegraphers rendered the country in the Civil War, still they have never been recognized nor are they upon the muster roll of the United States, consequently they have no title to pension under the law. They were civilian employees, and in order for them to secure a pensionable status they must first be given a military standing. Our committee would have no right to do this. This is a matter that

must properly come before the Committee on Military Affairs, and with the conditions as they are the Committee on Invalid Pensions has no jurisdiction in the matter.

The British Postal Service.

The post and telegraph employees in Great Britain have for many years past been fighting for reforms with but poor success. That their grievances are genuine there can be little doubt, a committee of business men appointed by Parliament having, in what is now known as the famous "Bradford report," strongly recommended certain improvements in the service. But Lord Stanley, the then postmaster-general, declined to act on the recommendations, and his refusal to ameliorate the lot of the employees whose grievances were found, by a committee formed of non-partisan business men, to be badly in need of redress, had caused a feeling of bitterness and indignation toward him to pervade the service for some years past, for, it is said, he made use of the term "bloodsuckers and blackmailers" in referring to the telegraphers of England.

The foregoing is a part of a lengthy aggressive article on the subject appearing in "The Advocate," a telegraphic journal published in the British island of New Zealand. It serves to show the bitter state of feeling entertained by the working telegraphic staffs in England against the prevailing system in that country due to the mismanaging control of the telegraph by the postoffice department—a feeling that is shared in large measure by the English public.

It appears that when the defeat of Lord Stanley, the postmaster general, in a recent parliamentary election was assured, the telegraphic operating force in the main office in London vented its satisfaction by arising en masse and giving three cheers for the man who had vanquished the unpopular head of the telegraph.

Postal Telegraphy Again.

The proposition to establish Government, or postal, telegraphy in this country in emulation of such practice abroad has found a champion in the House of Representatives in the person of Samuel W. Smith, of Michigan. In a somewhat lengthy speech delivered recently on the subject, a condensed extract of which is printed in another column, showing all the earmarks in its presentation of "playing to the galleries," the usual stock arguments, like in character to those employed by others who, parrot-like, occasionally take a whack at the question, were brought forward to show how far in advance foreign countries were to our own in the way they do things telegraphically. Heaven help us! No other country in the world possesses such a complete, effective and up-to-date telegraph equipment and service, low in price, as obtains on this continent, in the United States and in Canada.

In praising the efficiency of the post office in this country, to which Mr. Smith would make the telegraph an auxiliary, he fairly beams with delight when he makes known the discovery that the taking over of the telegraph by the former would act as an effective barrier against further loss to the Government by its unfortunate postal

department, inasmuch as the telegraph receipts would serve to wipe out the annual postal deficit. The post office must be in a peculiarly bad shape when such an advocacy as this is argued. Rather, we should say, turn the post office over to the care of the telegraph, or to some other proper private corporation even, if effective management be urged as necessary to its well being. It cannot be doubted, were this done, that first-class letter postage would be reduced from two cents to one cent, the service rendered more efficient, and conducted at a profit instead of at a loss, as now. This would be because more direct, practical, economical and efficient business methods would be introduced, such as individuals or corporations, by reason of necessity, are compelled to adopt in the management of their own affairs. It is not, we think, too much to say that nearly every business man who uses the mails to any extent, harbors many grievances of one kind or another against the post office, grievances regarding which it is often impossible to obtain redress, as it would be in the case of dealing with an express company, for instance. To tack the telegraph, therefore, to the post office, which already exhibits such an unfortunate dead weight of its own, would be farcical, indeed, if the telegraph is to continue to render the service which business needs demand.

If Mr. Smith had consulted competent telegraph authorities; had taken the wise precaution to have delved a little deeper into the statistics of the case before committing himself as to alleged facts, figures and comparisons respecting a subject of which evidently he possesses but a superficial knowledge, he doubtless would have hesitated to unburden himself in the public manner in which he has done.

The entire question of postal telegraphy in this country has been thrashed out repeatedly in these columns, and it is hardly necessary at this time to be betrayed into answering Mr. Smith in detail, yet we would strongly recommend that gentleman to put himself in communication with Mr. Robert P. Porter, the former United States census commissioner, who has made a study of the telegraph as it actually exists abroad. What Mr. Porter had to say in part on this subject was published in this paper in its issue of May 1. Mr. Porter would doubtless furnish Mr. Smith and all others who would blindly commit the policy of this Government to postal telegraphy, with such information as would cause them to "guess again."

A Report on Municipal Ownership.

A very interesting and elaborate report on municipal ownership in Great Britain, made by Everett W. Burdett, a Boston lawyer, is published in the *Journal of Political Economy* for May. Mr. Burdett went abroad, remarks the *Electrical World*, to make the investigation of public operation of utilities on behalf of conservative American interests. Their reports heretofore have

been held as confidential. Briefly stated, Mr. Burdett's conclusions are that municipal ownership and operation of public utilities in Great Britain has been only partially successful at the best, and has failed in many of the very respects for which its supporters claim most; and that, so far as the present status in Great Britain is desirable, it is owing to the conditions which do not exist and cannot be duplicated in America. Perhaps the most serious of the ill consequences is the hampering and restriction of industry. The backwardness of the development of electrical enterprise in England led to such a state of things that in 1902 the Council of the Institution of Electrical Engineers appointed a committee to investigate conditions and suggest action that would assist the industry. The committee's tabulated conclusions showed that the United States, with less than double the population of Great Britain, has six times the amount of apparatus installed for furnishing electricity to lamps and motors, sixteen times as much for traction, twenty-three times as many miles of electric railway, twenty-six times as many motor cars, and over five times as much invested in such enterprises.

Dr. S. S. Wheeler, president of the American Institute of Electrical Engineers, in a recent speech before that body, referred to Bacon's saying, that every man owes a debt to his profession, which he should recognize and pay as he is able. Every one should endeavor to uplift his profession and carry it forward. To this end the ethics should be well recognized. In the learned professions this is true, but the public, while classing engineering as a learned profession, does not accord it the same high standing. It should be the effort of each engineer to change this condition and to stand on the same high plane. Electrical engineering is the youngest branch, and as yet no definite stand in the matter has been taken. In the other branches the matter has been more discussed and codes laid out to guide those who can not decide such matters for themselves.

Mr. C. E. Diehl, manager of the Postal Telegraph-Cable Company at Harrisburg, Pa., and superintendent of fire alarm telegraph at that point, in a letter regarding the continuance of his subscription, wrote: "You did wisely to renew my subscription. I enclose herewith check for same. A man can't keep up with the times, telegraphically speaking, without your valuable journal. I take occasion to congratulate you upon the success you have attained in putting out a truly first-class telegraph paper, which every person in the business should take."

"Pocket Edition of Diagrams," etc., the latest revised edition, 334 pages and 160 illustrations, published by TELEGRAPH AGE, contains just the information every telegrapher requires, irrespective of his position.

Subscribe for TELEGRAPH AGE, \$1.50 a year.

The Convention of the Railway Telegraph Superintendents.

The twenty-fifth anniversary of the first meeting of the Association of Railway Telegraph Superintendents, will occur this year at Denver, Colorado, and may well be considered as marking an epoch in the history of that organization worthy alike of special celebration and of extended notice. To reach so dignified an age, so notable

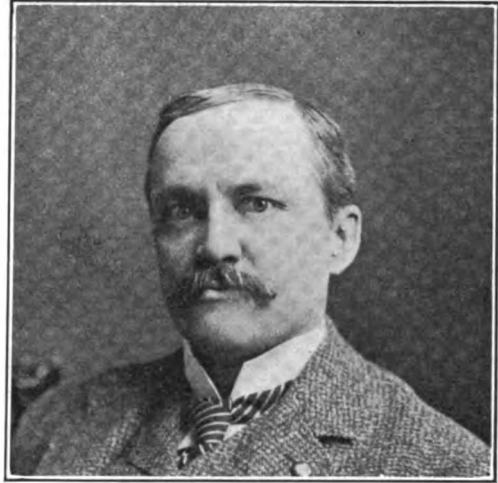


"THE ADAMS," DENVER.

The place of meeting of the Convention of the Railway Telegraph Superintendents.

an event as a "silver" anniversary would indicate, is accorded to but few societies, and if for nothing else is especially noteworthy on that account. The superintendents are to be congratulated on so auspicious an occasion, and that intelligent body of men have every reason to felicitate themselves on the substantial growth that has followed their efforts as an organization, the original declared

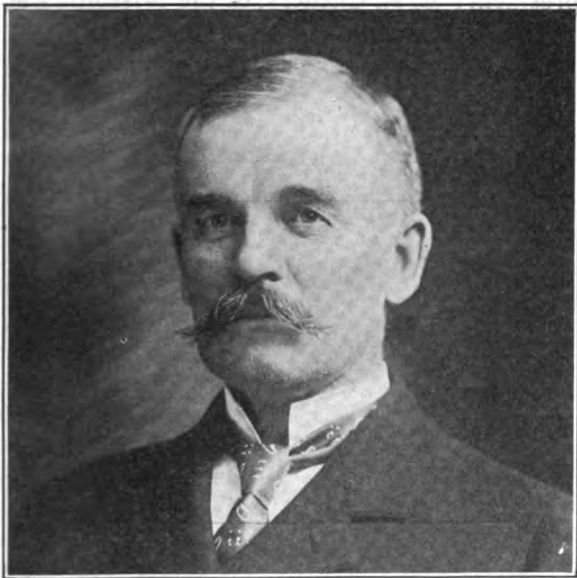
again as the importance of these annual meetings has come to be more generally recognized on the part of the railroad companies, the requirements of whose telegraphic departments have continually



E. A. CHENERY.

Vice-President of the Association of Railway Telegraph Superintendents.

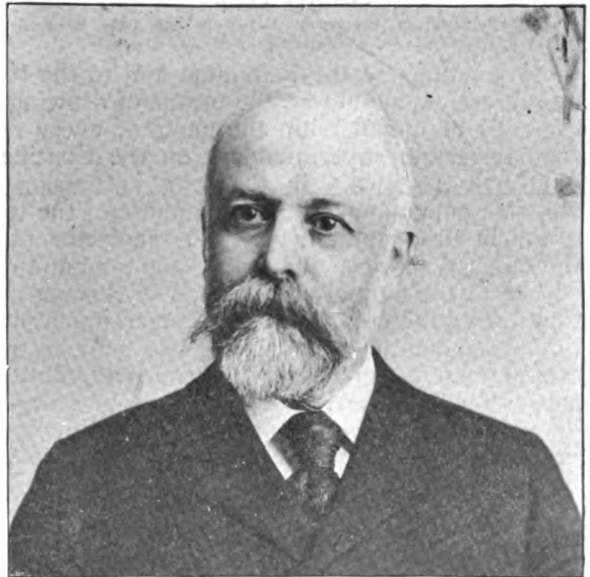
advanced the standards of that part of the operating service, the value of the office of the superintendent of telegraph has measurably increased. Particularly is this true where mergers have conspired to expand railroad systems into vast lengths, thereby adding to the responsibility of



E. E. TORREY.

President of the Association of Railway Telegraph Superintendents.

purpose of which was the improvement of the railway telegraph service. How far they have succeeded in effecting this laudable object may be observed by anyone who studies the improved methods of to-day, compared with those of twenty-five years ago, for the superintendents, as a class, have been quick to recognize and adopt improvements as they have arisen from time to time. Then



P. W. DREW.

Secretary and Treasurer of the Association of Railway Telegraph Superintendents.

the head of the telegraph department. The importance to the various telegraphic departments of the great railway systems of this country, between which, at least, there should be a general harmony of thought and purpose, in having executive heads meet thus yearly in conference, cannot be over-estimated. In these progressive

times, fraught with continual change, marking a higher development in methods and materials, of the adoption of new and improved ways and means, such meetings are productive of the greatest good. They afford an opportunity for an interchange of thought and views, the presentation of fact and experience, the discussion and comparison of which cannot be accomplished so readily in any other way. The growing worth of



CHARLES SELDEN.
Superintendent of Telegraph, Baltimore and Ohio Railroad,
Baltimore, Md.

these meetings to the individual and to the road he represents, should be the means of drawing to the rolls of membership the name of every railroad telegraph superintendent on the Continent of North America. In the long succession of valuable papers, covering every phase of the telegraph in its adaptability to the requirements of the railroad service, that have been read and discussed at the annual conventions of this association during the past twenty-five years, much practical good has been evolved. The subjects presented possess a greater significance and value because they have been wrought out of the everyday practical experience of their authors. Educational in its influences many a superintendent, because of these conventional meetings, has had the horizon of his knowledge expanded and has found his reward in promotion to higher executive office, many reaching the round of the presidency of vast railroad systems.

The coming convention at Denver will be held on Wednesday and Thursday, June 20 and 21, the official days named, but Friday and Saturday, June 22 and 23, will be especially set apart for social recreation and sight-seeing of which Denver and its vicinity offers such a grand opportunity in its magnificent environment of natural scenery. Headquarters will be established at The Adams, that city, and that excellent hostelry, one

of the best appointed hotels in the West, will extend a grateful hospitality during the three days of the convention, to delegates and all who attend in whatever capacity. Suitable room will be provided for the display of exhibits and it is expected that a number will be on view. The rates at The Adams, which is conducted on the American plan, are \$3 per day; room with bath, \$3.50; two persons in one room, with bath, \$6.50. Reservations for hotel accommodations should be made direct with the manager.

June 20 and 21 the time of the members will be devoted closely to the demands of the business end of the convention, a full report of which will appear in these columns in the issue of July 1. Many important topics are coming up for consideration and there will be read a number of highly interesting papers treating on timely subjects.

The committee of arrangements, consisting of Messrs. C. A. Parker, E. E. McClintock, J. M. Walker and J. Munday, all of Denver, has planned an admirable scheme of social entertainment to cover the hours of leisure.

Other committees are: Topics—V. T. Kissenger, of Lincoln, Neb.; F. H. Van Etten, of Danville, Ill., and S. K. Bullard, of Sedalia, Mo. Composite circuits—U. J. Fry, of Milwaukee, Wis.; G. H. Groce, of Chicago, and R. L. Logan, of Kansas City, Mo.

Officers will be chosen to succeed E. E. Torrey, of the Mobile and Ohio road, Jackson, Tenn., president; E. A. Chenery, of the Missouri Pacific



EDWARD P. GRIFFITH.
Superintendent of Telegraph, Erie Railroad, New York.

Railway System, St. Louis, vice-president, and P. W. Drew, of the Wisconsin Central Railway, Milwaukee, secretary and treasurer.

On Wednesday afternoon, June 20, the ladies of the party will be afforded a view of the city of Denver by means of a trolley ride. On Thursday, June 21, the Georgetown Loop trip is planned for the ladies, leaving Denver about 8 A. M., and returning about 3.30 P. M., and the "Seeing Den-

ver" car ride for the members of the association in the afternoon will be undertaken, if business will permit. An informal dance will be given in the evening by the management of The Adams.

On Friday, June 22, a fine excursion will be made to the famous gold mining camp of Cripple Creek. This will be an all day affair, for it is planned to leave Denver about eight o'clock in the morning, reaching the city on return about nine o'clock in the evening. Such a trip will afford a day of intense interest to all.

It is especially desired that all will remain over Saturday, the 23d inst., in order to take the trip over the Continental Divide. This will be a magnificent excursion of rare pleasure to those who participate in it. The route is over the "Moffat Road," and the excursionists will leave the city at eight o'clock in the morning, expecting to return by half past five in the afternoon. This road, in crossing the Continental Divide, climbs to an altitude of 11,660 feet above the sea-level, or about 700 feet above timber line. The snow at this elevation never entirely disappears, and at the time of the convention the summit will doubtless be clothed with several feet of the same.

The Denver and Rio Grande, Colorado and Southern, Denver, Northwestern and Pacific, Crystal River and Colorado and Wyoming railway companies tender free transportation to all members and families to any and all points on their

William Kline, vice-president, and C. S. Jones, secretary and treasurer.

The second meeting was also held in Chicago, at the Grand Pacific Hotel, on June 13 and 14, 1883. There were thirty railroads represented at this meeting, showing at that early date the interest felt in the organization. Mr. Morley was again elected president; Charles Selden, vice-president, and P. W. Drew, secretary and treasurer, now the veteran office holder of the association, for each year since he has been elected to the position he has continued to fill with so much



W. W. RYDER.

Superintendent of Telegraph, Chicago, Burlington and Quincy Railway Company, Chicago, Ill.



U. J. FRY.

Superintendent of Telegraph, Chicago, Milwaukee and St. Paul Railroad, Milwaukee, Wis.

lines, and it is hoped that many will visit the various resorts, and remain as long as possible.

It is interesting to trace the history of the Association of Railway Telegraph Superintendents, even if space permits but a brief chronological reference. The organization was effected in Chicago, November 20, 1882, the officers elected for the first year being W. K. Morley, president;

credit, alike to himself and to the association.

At the third meeting, held September 17, 1884, Charles Selden was made president, E. C. Bradley vice-president, and P. W. Drew secretary and treasurer.

The fourth meeting was held in Cleveland, O., June 17 and 18, 1885. The retiring president, Charles Selden, who was very popular, was presented with a gold-headed cane. He was succeeded by C. W. Hammond, Geo. L. Lang becoming vice-president, and Mr. Drew secretary and treasurer.

St. Paul was the place for the 1886 meeting, fifth in the series, the dates being June 16, 17 and 18. Thirty-four railroads were represented. The guests were handsomely entertained, an excursion being given in their honor to Duluth and the Apostle Islands by rail and boat. A. R. Swift was elected president, Geo. L. Lang vice-president, and P. W. Drew continued as secretary and treasurer.

Boston claimed the sixth convention, July 13 and 14, 1887. A gavel was presented to President Swift. It was at this meeting that the practice of showing exhibits of telegraphic and other electrical devices was first introduced. Geo. L. Lang was elected to the presidency, G. C. Kinsman was

made vice-president, and Mr. Drew secretary and treasurer.

The seventh annual meeting was held in New York, at the Murray Hill Hotel, July 11, 1888. At this convention Commander Brown, of the Naval Observatory, Washington, was present and made some interesting remarks regarding the distribution of time. Edison's phonoplex system was shown in operation. The election of officers resulted in making G. C. Kinsman president, C. A. Darlton, vice president, and Mr. Drew secretary and treasurer.

In 1889, the eighth convention met at Washington, D. C., October 16 and 17. Mr. Harrison was then president of the United States, and he received the members at the White House. C. A. Darlton succeeded to the presidency, Geo. T. Williams becoming vice-president, and Mr. Drew, of course, secretary and treasurer.

The next convention, the ninth, assembled at Niagara Falls, June 18 and 19, 1890. This meeting was notable for the large number of papers read and the exhibition of the long distance telephone by which conversation was held with parties in Albany and in New York. Geo. T. Williams was elevated to the presidency, George M. Dugan was elected vice-president, and Mr. Drew retained in his old position.

June 17 and 18 were the convention days of the tenth annual meeting, held in 1891, at Cincinnati. There were representatives present from thirty-seven railroads. At this date the annual dues were advanced to \$5. C. S. Jones was elected president, L. H. Korty vice-president, while Mr. Drew was not defeated for secretary and treasurer.

The eleventh annual convention met at Denver, on June 15 and 16, 1892. Forty-seven members were present, and a meeting unsurpassed for interest and enjoyment was held. Thomas A. Edison had a paper. L. H. Korty became president, U. J. Fry vice-president, and Mr. Drew secretary and treasurer.

Milwaukee was selected as the next place of assemblage, the dates being June 20 and 21, 1893, the twelfth in the list. The World's Fair at Chicago was then in progress and thither most of the members went after the convention adjourned. U. J. Fry was elected president, O. C. Greene vice-president, with Mr. Drew as usual was third in the race.

The superintendents celebrated their thirteenth convention at Detroit, June 13 and 14, 1894. O. C. Greene was elected to the presidency, E. R. Adams to the vice-presidency and P. W. Drew to the secretary and treasurer.

In 1895 the railway telegraph superintendents went to Montreal, Que., holding their fourteenth annual meeting in that ancient city on June 12. M. B. Leonard was elected president, J. W. Fortune, vice-president, and Mr. Drew was returned to his old office by acclamation.

Fortress Monroe, Va., next claimed the superintendents for their fifteenth convention, June 17, 1896. George M. Dugan became president, J. W.

Lattig vice-president, with Mr. Drew in the third place.

For the second time Niagara Falls fulfilled its claims as a convention city, for there the superintendents met for their sixteenth annual meeting on June 16, 1897. J. W. Lattig was promoted to the presidency, W. W. Ryder was elected vice-president, and Mr. Drew secretary and treasurer.

The seventeenth convention took place at Omaha, Neb., the date being June 15, 1898. A committee made a lengthy report on low resistance relay experiments. W. W. Ryder received the election to the presidency, the position of vice-president going to L. B. Foley, and that of the secretary and treasurer, as usual, to Mr. Drew.

It was at Wilmington, N. C., that the eighteenth annual convention was held, the dates being May 17 and 18, 1899. L. B. Foley was made president, W. F. Williams vice-president, and Mr. Drew, of course, secretary and treasurer.

The next convention, the nineteenth in the series, occurred June 20, 1900, at Detroit, Mich. The claims of the telephone as an auxiliary agent to the telegraph in railroad operating, received considerable attention at this meeting. Mr. W. F. Williams was advanced to the presidential office, C. F. Annett was elected vice-president and Mr. Drew was returned to his accustomed place.

Buffalo, N. Y., was selected as the meeting place for the twentieth annual convention, the date being June 19, 1901. This was the year of the Pan-American fair in that city, a fact which stimulated a large attendance, for the presence of superintendents surpassed in numbers all previous records. The presidency of the association went this year to C. F. Annett, the vice-presidency to F. P. Valentine, and to Mr. Drew was accorded the secretary and treasurer.

In 1902, the twenty-first convention assembled at Chicago, on June 18, about fifty members of the association being present. The discussion of the subject of typewritten train orders was a feature of this session, a matter that awakened much interest. The use of the telephone in connection with railroad operating, also, received earnest discussion. J. H. Jacoby was elected president, W. J. Holton vice-president, and P. W. Drew secretary and treasurer.

The South claimed the twenty-second convention of the railway telegraph superintendents, and it was on May 13, 1903, that the association met at New Orleans. At this meeting Mr. Drew read an interesting paper, reciting what the association had accomplished and making the statement that its membership had reached sixty. The election of officers resulted as follows: C. S. Rhoads, president; C. P. Adams, vice-president, and Mr. Drew, secretary and treasurer.

It was at Indianapolis, Ind., June 15, 1904, that the twenty-third convention was held. Once again a World's Fair was an attractive side issue, for at the neighboring city of St. Louis the big exposition was in full operation. The "Big Four"

railroad, through the influence of C. S. Rhoads, its superintendent of telegraph, at the conclusion of the convention generously conveyed free of expense all who wished to go to St. Louis. The question of composite circuits was ably considered in a paper read by Mr. E. P. Griffith, and the interest shown in the subject was apparent in the long and animated discussion that followed. The election for officers resulted in the selection of H. C. Hope, president, E. E. Torrey, vice-president, and the continuance of Mr. Drew as secretary and treasurer.

The convention of last year, 1905, met at Chattanooga, Tenn., on May 17, and was the twenty-fourth. This was a very interesting meeting. A feature of the occasion was the reading by W. J. Camp of his paper on "High Tension Wires on Railway Right of Way." The elections resulted in placing E. E. Torrey in the presidential chair, making E. A. Chenery vice-president, and Mr. Drew secretary and treasurer.

SOMETHING ABOUT DENVER.

Denver, like Jerusalem of old, is beautiful for situation. It may well be questioned whether any other American city possesses such magnificent environments of bold and majestic mountain scenery. To the westward, beyond the foothills, the long line of the Rocky Mountains, snow capped, rear their lofty heads, ever changing in appearance, responsive to different moods of the atmosphere, and presenting a most impressive view. To the south rises the great sentinel elevation of Pike's Peak, its distance seemingly reduced by the clearness of the atmospheric conditions. Other mountains also group themselves. To the north spread the great plains. Hereabouts is the highest land on this continent, and near at hand is the Continental Divide, separating the flow of waters descending to the Pacific and to the Gulf of Mexico. Denver itself is situated on a table land elevated about one mile above the sea level, and with an equable and delightful climate throughout the year, and with architectural beauty of physical construction it may well be termed "The Queen City of the Plains."

The city occupies a succession of gentle inclines, gradually rising from the South Platte river, and extending to Capitol Hill, the finest residential quarter of the town. The city is well drained, and an abundant water supply of excellent quality is obtained from artesian wells.

The business thoroughfares, such as Sixteenth and Seventeenth streets, contain many fine stores, banks, etc., and the crowds of people and appearance of activity on all sides clearly indicate the commercial greatness of the town. The financial interests also centering here are important, while the manufacturing industries are large and diversified in character. Denver, in fact, is a busy town. The Chamber of Commerce fills an important place in the business life of the city,

and has a large membership, likewise the Mining Stock Exchange, for Denver early became the receiving and distributing point for the valuable minerals mined in that section of the country.

The residential streets have a peculiar charm and attractiveness of their own, impressive at once to the stranger. Most of the dwellings stand detached, and many are fairly buried in a wealth of foliage and shaded by forest trees, for vegetation here is almost tropical in its luxuriance. Such avenues as Grant, Sherman, Logan, Pennsylvania, and others that might be named, lined with beautiful homes and surrounded with shaded lawns, are nowhere exceeded in beauty and stand in evidence of the refinement observed in the people of that city.

A reference to Denver would not be complete without mention of its public buildings. Many of these are massive and costly in character and exceedingly attractive, considered from an architectural standpoint. The state capitol, with its high dome, and from which one of the finest views of the city may be obtained, is built of granite, and cost upwards of \$2,000,000. Then there is the Tabor Grand Opera House, valued at nearly a million; the federal building, \$700,000; the county court house, costing \$400,000; the city hall, \$350,000, and others.

The situation of Denver is such as to constitute it as the natural gateway to the mountainous country further west, hence it is that the numerous and important railway systems meeting here, constitutes this one of the largest railway centers in the country. Nearly all roads occupy the Union depot, a splendid structure built of lava and sandstone.

Denver has had a rapid and almost magical growth, covering an entire period of less than fifty years, for it was in 1858 that it was first settled. The first house erected was on the west bank of Cherry creek, near the present site of the Larimer street bridge. The city takes its name from Gen. J. W. Denver. Its population in 1900 was 133,859. It is now believed to be over 150,000.

Civilization has rapidly acquired control over the wildness of nature, and the beautiful and flourishing city that has been created in so short a time, comparatively, is an evidence of the energy and grit of the spirit of the American people, particularly of those who have and who are accomplishing so much for the Colorado city.

Mr. Arthur Stringer is the author of "The Wire-Tappers," a novel that has just been issued by Little, Brown & Co., of Boston. The hero, an electrical inventor, and the heroine, a beautiful English girl, become by force of circumstances, associated with a man who attempts by wire-tapping to beat a poolroom. The efforts of the girl to uplift the man she loves and to extricate him and herself from evil associations, make an entertaining story.

Relation of the Telegraph to the Railway.

[Abstracted by the Railway and Marine World from a paper read by B. S. Jenkins, of Winnipeg, Man., general superintendent of telegraphs, Western Lines, Canadian Pacific Railroad, read at Officials' Conference, Field, B. C.]

In connection with the relation of the telegraph to the operating department, the telegraph may be said to constitute the great actuating and vital force in the operation of the railway. The great essentials for successful telegraph service are adequate wire and instrument equipment efficiently maintained and properly utilized. To provide adequate wire and instrument equipment, and to maintain the same efficiently, is the chief service performed by the telegraph for the operating department, but in this connection, I would observe that the telegraph department is directly responsible and accountable for such service only to the extent of the control by the telegraph department of the agencies necessary to secure such service. The agencies beyond the control of the telegraph department are to be found in the operating department itself and in the maintenance of way department, and unless there is active, intelligent co-operation on the part of these departments, the telegraph service cannot be efficient. Particular agencies in the operating department, whose services are indispensable in securing efficient telegraph service, are the train despatchers, agents and operators. Interruptions occur from various causes, fire, flood, lightning, rock, snow and landslides, wind and sleet storms, train accidents, and from interference by workmen along the line by derricks, steam shovels, pile drivers, bridge gangs, etc. The first duty of the circuit managers (wire testers) when such interruptions occur is to provide a wire for the train despatcher. Usually at such times, the train despatcher will bestir himself to give assistance, but very often when he secures a wire he is no longer interested. Despatchers, therefore, should lend every assistance when called upon by circuit managers. In cases where there may be trouble at more than one point covered by a lineman's beat during severe weather, and when night is likely to overtake the lineman before he can cover the ground, despatchers should give orders to trains when at all possible to stop for linemen to make temporary repairs, which usually will only occupy a few minutes, and be the means of restoring communication quickly.

Again, in cases of severe trouble and when no trains may run for hours, a light engine is required and train despatchers should be authorized to act promptly on request of the circuit managers to furnish same. In such case, the telegraph department would become responsible for any unnecessary use of light engines. There are despatchers and despatchers. I have known

a despatcher working one of the heaviest train sections, who could find the means, apparently with no delay to train movement, to render such assistance in the recovery of wires. Another despatcher, working a different trick on the same train section, will curtly order the circuit manager off the wire if he endeavors to do business. In some instances despatchers have undertaken to help themselves to wires, or order ground wires on and patches made at offices, without notification to the circuit managers, thus putting in more trouble which the circuit manager has to clear up, in addition to the original trouble. The telegraph department is responsible in this connection and the circuit managers should control the circuits. Agents and operators in many cases fail to do the needful. They fail to answer circuit manager's call for "wire," and when reported to their superintendent for such failure, they excuse themselves to their superintendent on the ground of attention to other work, and nothing is done. In very many cases agents and operators are unable to do switchboard work required by the circuit manager, notwithstanding a leaflet issued over a year ago giving full instructions with diagrams, and notwithstanding the fact that our inspectors are continuously traveling inspecting offices and are available to post agents and operators on any points that may trouble them. With these diagrams and instructions, however, and intelligent operator, if he gives suitable attention to the subject, can qualify in a very short time, and, I think, that such qualification should be made compulsory, and a time limit given within which they must qualify, evidence of such qualification to be a certificate from the inspector of telegraph, that they have been fully tested and found qualified. Telegraph service for the railway, exclusive of service in connection with the movement of trains, is also in the hands of the operating department, except at Montreal, Winnipeg, Calgary and Vancouver, where this work has been transferred to the telegraph department. It, therefore, rests very largely, if not entirely, with the operating department itself to see that this branch of the service is satisfactory.

There is urgent necessity that the use of the wires for railway service business be restricted. Many telegrams sent are entirely unnecessary, and in connection with matters that could be adjusted by train mail. Also many telegrams are sent that could be reduced in length, very often one-half. There is need of a rigorous censorship in this connection. Such censorship should be under the direction of some one in connection with the operating department or railway service, sufficiently familiar with all departments of the service to enable him to act intelligently.

I have now to direct your attention to a branch of the service where efficient service is especially necessary, for the reason that any excuse for defective service is not accepted. I refer to telegraph service rendered by the company direct to the public, usually called "com-

mercial business." Here again is a service which particularly on Western lines is largely, if not entirely, dependent upon the services of agencies controlled by the operating department, with the added difficulty that these agencies are compelled to give preference to telegraph service for the operating department in connection with the movement of trains. In other words, if we have defective service in connection with our own telegraph service, as applied to railway operation, we have increased difficulty in giving a satisfactory service to the public. Seventy-five per cent. of the business handled for the public on Western lines is handled through the railway stations. Defective service connection with the company's own interests is a matter of domestic concern, but service for the public is a very different proposition. The public does not discriminate between departments. The company operates a telegraph system through Canada, from ocean to ocean, connecting at each end with cable service across both oceans, and advertises the fact extensively in its various publications, so that the public have now come to consider that they should obtain better telegraph service along the line of the Canadian Pacific than along any other railway system. The company's transcontinental passengers look upon its telegraph service as a very great convenience, not given by other transcontinental systems which do not control the commercial telegraph service. The reputation of the company, therefore, is at stake in this matter and in the same sense as defective service in connection with freight, passenger, dining, sleeping car or other services would be criticized. I am aware that our superintendents and other operating officers very often are not impressed with the importance of this service because of their knowledge that the revenue at many stations is small in comparison with the freight and passenger receipts, but in the aggregate it affords a very important source of revenue to the company. A joint circular was issued over a year ago by the superintendent of transportation and myself, approved by the second vice-president, defining the duties of despatchers, circuit managers, agents, operators and conductors in connection with telegraph service. These instructions, which have been closely followed up by personal and continued personal supervision by superintendents and inspectors have had a very salutary effect. Since these instructions were issued, there has been a noticeable improvement in the service, but nevertheless agents are disposed to regard commercial service as a side issue, the same as express, and superintendents are not inclined to reprimand agents for neglect of commercial service especially if other station work is properly attended to. There is perhaps a feeling that the importance of public service in connection with telegrams is over-estimated. I wish to say most emphatically that a telegram is an emergent communication, and the company having undertaken a public service must perform such service sat-

isfactorily. I wish to emphasize the importance of superintendents co-operating with the telegraph department to insure that instructions contained in the special circular are strictly observed by all employees handling commercial telegrams.

Nearly 2,000,000 paying telegrams were handled at Western Lines offices in 1905. Between 1900 and 1905, telegraph earnings increased 114 per cent.

Present wire facilities seem adequate, and with additions to be made this year will be fully so. In the construction and maintenance of lines, we are fully abreast of the times. In the electrical branch and in operation, our methods are also up-to-date, our instruments and apparatus generally being of the latest and best type. The old Calaud or gravity battery, which has been a faithful friend of the telegraph, is now being largely displaced by storage battery, both for main batteries and for local batteries where suitable current from power plants is available, and with very beneficial results. The method of conducting wires into stations by means of aerial cable has been largely adopted, over one hundred offices on western lines having been thus equipped.

Mr. J. M. Maddox, assistant superintendent of the American District Telegraph Company, formerly of San Francisco, but now by force of circumstances located at Oakland, where the main office of the company is situated, in being advised that he had over-remitted to TELEGRAPH AGE to the extent of fifty cents on a certain transaction, writes in a letter sparkling all over with manly grit, while philosophically accepting the inevitable: "It is especially gratifying to know that I have a credit of fifty cents, as I think it is about all the cash I had left after the fire; but let us forget the disaster and start over again. I have lost everything I had on earth, but do not want to lose TELEGRAPH AGE. I, like thousands of others, lost every blessed thing I had on earth except the clothes I had on my back, besides about \$500 worth of books that I regret more than most anything else, as I had become somewhat of a crank on having good books around me, although I had not as much time to read them as I would have liked; but, thank God, I have got two good hands left and more determination than you could put into a whole train of box cars, and I am going to start over, forgetting the past just as quick as possible."

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of TELEGRAPH AGE, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

TELEGRAPH AGE is the only telegraphic newspaper published in America. It is up to date, covering its field thoroughly, and no telegraph official or operator, can afford to be without it.

Recollections of the Early Days of Telegraphy.

BY S. P. SWARTWOUT.

(Taken from the Record of the Telegraphic Historical Society of North America.)

In the year 1847 I became associated with the small corps of operators who were employed by "The Magnetic Telegraph Company," as it was then named, in the office at Jersey City, N. J.

The line extended from Washington, D. C., to New York city (with interruptions by reason of the Delaware and Hudson rivers), and, I believe, was the first telegraph line constructed for commercial purposes.

The office consisted of two rooms in the second story of a building on Montgomery street, located, I think, on the second block west of the Hudson river. The instruments, two in number, were fixed in the front room, which overlooked the street, while the batteries were arranged in the rear room, which was also used as a general storage room for all kinds of articles and fixings belonging to the office.

Of the operators employed there I remember the names of Edwards, Gregory and Glassbeck; the latter also kept the books and the accounts of the office. I was then about nineteen years of age and was employed as assistant operator and copyist. There was another operator, I think, named Parke. The business, of course, was in its infancy and of small amount compared to what it subsequently became. The Morse instruments were used, with clock-work, which carried the strip of paper under the pen or point, which made the indentations standing for the letters of the alphabet. This clock-work was run by a heavy weight, and when it ran down to the floor the operator had to wind it up.

During the session of Congress the telegraphic reports of its proceedings were daily transmitted over the wire to the New York papers, principally the "Herald," "Sun" and "Tribune," and while they were coming we were pretty busy and were kept at work until near midnight in order that the papers could have the latest news. As it was not thought possible then to telegraph over a large river or other body of water, the method in use was to telegraph by wire from Washington to the Philadelphia office, where the message was re-written and carried across on the ferry by messenger boys to the office on the east bank of the Delaware river; whence it was again transmitted by wire to the Jersey City office, where it was again re-written and carried over the Hudson river on the ferryboat by messenger boys and delivered in New York city; or, if addressed to some place out of the city, then it was taken to the New York telegraph office and mailed to its destination. So much re-writing of messages and ferrying caused considerable delay, so that the speed of transmitting messages would not compare with the present service; but it was far in advance of the mails and was then thought wonderful.

There were several messenger boys employed at the Jersey City office for carrying messages, at low wages. The hours for business were nominally from 8 a. m. to 6 p. m.; but during the sessions of Congress, the office was run until twelve at night for the reception of the congressional reports. This extra work was done by two operators on alternate nights, one to take the message and one to write it off, and, as the messenger boys were let off duty at 6 o'clock, one of the operators had to carry over the reports to the newspaper offices on the last ferryboat, which then left Jersey City at 12 o'clock midnight, and did not resume the trips again until morning.

The operator who went over with the despatches for the newspapers on the last trip of the ferryboat, was obliged to stay in New York the rest of the night and return in the morning. Many nights have I performed this duty, going up by dark stairways to the pressrooms of the "New York Sun," the "Herald" and the "Tribune" after midnight, and then to a hotel for lodging till morning. We received extra pay for the night work and our hotel expenses were also paid.

The active business manager at that time was Mr. J. M. Clark, who was the secretary and treasurer of the company. His office was, I think, on Front street, on the east side of New York; he being also engaged in the shipping business, and kept the books of the telegraph company in his private office.

Lord Kelvin's Conception of an Atom.

Lord Kelvin, in an article on "Atom with Enormous Energy for Radio-activity," published in the Philadelphia Magazine, puts forward a plan of an atom capable of storing an electron (or negative electron) with enormous energy for radio-activity. The atom of ponderable matter is supposed to be intrinsically charged in concentric spherical shells, each such layer being uniform in itself, but the density and sign of the distribution varying from layer to layer. A curve, called the work curve, is then plotted, whose ordinates show the work required to bring an electron from infinity to the point in question. In the curve drawn there are two minima, one just within the radius of the atom and a second at its center. Between these two minima there is one maximum. The curve is, of course, symmetrical about the center of the atom. If, therefore, an electron be placed at or near the center of the atom, that is, between the two maxima of the work curve, it has stability, but only through a narrow range. If it is taken further away from the center than these maxima, the electric force of the atom upon it will shoot it out of the atom with prodigious velocity, which will be but slightly diminished by the attraction of the whole atom when it gets outside.

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The Advent of the Edison Automatic at Omaha.

BY DR. L. M. RHEEM.

In looking back through the years, other things come to my memory beside names and faces. One of these things on which I have never had an opportunity offered to adequately voice my opinion was the Edison automatic which drifted into our office at Omaha, Neb., during the closing years of the Atlantic and Pacific Telegraph Company. You have undoubtedly heard of the metaphorical cuckoo, which has been so often used in giving a concise description of anything possessing particular points of excellence. I use the word advisedly when I say that this automatic was a cuckoo of the purest breed. In fact, I believe that it was the original cuckoo.

Our advance information of the contraption was that its rate of speed was fifteen hundred words per minute; that it did not require an operator to work it; that after providing yourself with a girl or boy of immature years, whose business it would be to perforate the messages and press on a paper strip, the salary of said boy or girl being not to exceed thirty dollars per month, you were to go out into the highways and byways gunning for the services of a gentleman "low in the forehead and strong in the back," who was the possessor of a clear eye and a steady hand, whose duty would be to feed the aforesaid paper strip into the transmitter of the machine and turn the crank for the sum of forty dollars per month, which we were told was the amount paid in Buffalo. We also heard other things too numerous to mention. Reasoning deductively we figured that the operating expense could be cut about seventy-five per cent. Before the arrival of the "wonder" things looked blue for my force, the individual members of which spent a great deal of time figuring out a sort of a pyrotechnical finish for a long and useful career. While there was nothing said about the abolition of managers a vein of uneasiness occasionally made its appearance in the thoughts of that official, although he continued to look wise and prosperous.

At last the great day came when the basilisk destroyer of honest labor arrived in town in company with Dan Sweet, the expert who was to set it up, a young Englishman whose name has escaped me, but who could spend more time in finding the point of a joke than anyone I ever met, who was to be the perforator, and a sleet storm that prostrated the wire for three days, making up the first really big four.

We all took a deep interest in the instruments and in seeing Dan juggle them into position for business. The perforating machine was a sort of a hybrid typewriter, as noiseless and easy running as a rock crusher. The apparatus required a bichromate of potash battery, the solution for which had to be mixed in a large crock. A good mixer usually got a plentiful portion of the juice on his clothing. The instruments mounted looked

imposing, resembling nothing that had ever been seen west of the Missouri. The synchronizing arrangement was a wonderful thing, being located on the sella turcica of the operator's sphenoid bone about three millimeters back of the pineal gland, which some authors contend is the seat of fancy. Taking it "by and large," it was, as I said before, a cuckoo.

On the evening of the day on which Dan completed his onerous labors, the lines came up, and the Bos'n piped all hands on deck for rough work. You talk about a saturnalia of coincidental circumstantialities; we had it that night of the long ago. We had perforated all our business and, as the rule was that all eastbound messages had preference, A. B. Hilliker sat in to "send" to Chicago. As the thing had been billed to send 1,500 words a minute, Hilliker took a guess and cranked it for all he knew how. When he finished sending all the business the "Ch" man said "Wt dd u sa?" Hilliker sent him the bunch again a couple of times and we were "clear."

Then "Ch" started to send to us. As the operator there had had practice we got his business in better time. The stuff was sent backward and was received on wet paper, the chemical action of the current bringing the signals out in a beautiful blue color.

We had a large force of copyists as in addition to the regular force of the office, Mr. J. J. Dickey, Mr. L. H. Korty, and the day force from the Union Pacific office had come around to "help out." In addition to the force of copyists we had invited a large number of "prominent citizens" in to see the action of the great invention that spelled ruin for the great Western Union monopoly. These visitors had to be told that a dot and a dash was "A," a dash and three dots was "B," and so on down the alphabet, and that a cable addressed to Pigtail, San Fran., did not mean that that was the right name of the addressee, but that it was a registered address which was secured in such and such a way; that a message reading "Somnolex abdicent parallax simplicity" was what was called a code message and that each word meant a whole lot of words, and so on, and so on.

Each copyist had extemporized a place to handle his reel of business, and when it was served to him he sat down and began to copy. You would just get a good start when you would turn round to ask your neighbor's opinion on a certain combination; while the conference was in progress, one of the visitors would knock your box over and go traipsing off down the room with a string of green paper around each ankle. But the visitors were without exception very polite; they always said "Oh!" when you called their attention to the fact that they had a "death" message on their person to which they had no color of right. When we finally got the wreck cleared we sorted out all the messages that sound-

ed reasonable, and then had Chicago send the rest by plain Morse.

It was not long after this that we got the animal tamed so that we could drive it single or double, and once in a while we would do some really good work with it. The ridiculous combinations that it used to perpetrate, however, were sometimes so numerous that they ceased to be funny.

The Old Time Telegraphers' and United States Military Telegraph Corps.

At a meeting held recently at Washington, D. C., by the joint executive committee of the Old Time Telegraphers' and Historical Association and the United States Military Telegraph Corps, a programme was determined upon in part providing for the entertainment of members at the next annual reunion which occurs at the capital city on the 9th, 10th and 11th of October next. Headquarters will be established at the Arlington Hotel, a fine hostelry which faces Lafayette Square, just opposite the Whitehouse. The location is an exceptionally pleasant one, and will doubtless be much appreciated by the visiting telegraphers. When it is said that a special reception will be tendered the telegraphers by President Roosevelt, an inkling of the attractiveness of the meeting may be judged. The reception will occur at the White House at noon on October 10. It is proposed also to hold an evening reception at the Corcoran Art Gallery, when those in attendance will have an opportunity of inspecting the noted works of art there on view. Besides this there will be a concert by the famous Marine Band at the navy yard; a dinner at Cabin John's Bridge; an exhibition of cavalry drills and exercises at Fort Myer, near Arlington, a trip to Mount Vernon and an evening at Chase's Opera House. If this be the skeleton of the plan of entertainment already provided for, the full programme, when completed, will offer to the telegraphers exceedingly attractive features well calculated to promote their pleasure. The officers of the Old Time Telegraphers are: William H. Young, Western Union Telegraph Company, Washington, president; George W. Ribble, superintendent Postal Telegraph-Cable Company, Washington; Charles P. Adams, superintendent of telegraph, Southern Railway, Washington, and J. B. Yeakle, superintendent of fire telegraphs, Baltimore, vice-presidents; John Brant, secretary and treasurer, 195 Broadway, New York. The executive committee comprise the following: John C. Barclay and Charles C. Adams, New York; Urias J. Fry, Milwaukee; George H. Corse, Ogden, Utah; Henry F. Taff, P. V. De Graw, George C. Maynard, Ernest W. Emery and Jesse H. Robinson, Washington.

The officers of the Society of the United States Military Telegraph Corps are: Col. William B. Wilson, Philadelphia, president; W. L. Ives, New York, vice-president, and J. E. Pettit, Chicago, secretary and treasurer. The executive committee is made up as follows: E. Rosewater,

Omaha, Neb.; A. H. Bliss, Chicago; Col. A. B. Chandler, New York; W. R. Plum, Chicago; George C. Maynard, Washington; R. B. Hoover, Amsterdam, N. Y.; M. H. Kerner, New York; J. D. Cruise, Kansas City, Mo., and John Wintrup, Philadelphia.

The Increasing Demand for Copper.

The increasing demand for copper, due to its extraordinary use in the electrical industries, is dealt with in a recent report to the Department of Commerce and Labor, at Washington. The price for this metal, remarks the Electrical Review, recently attained the highest point since 1888, \$418.51 per ton. The average price for the last five years was \$301.72. The world's annual production is now estimated to be 700,000 tons. The production for 1905 was 100,000 tons greater than the average for the last five years. The average yearly increase in production before this time has been 748 per cent., and practically all of the important increase has taken place on this continent. The output in the United States for 1905 was 397,909 tons. Mexico produced 60,000 tons, and has doubled her output since 1900. It is estimated, by taking the average increase given above, that the demand for copper by 1910 will be 875,000 tons, and unless some substitute is found for this metal the yearly demand will be 1,500,000 tons by 1920.

The only metal which has been brought forward as a serious competitor for electrical purposes is aluminum, and up to the present time the relative prices of the two metals have not brought aluminum into very wide use. The increasing price of copper should, however, lead to the greater use of aluminum, provided, of course, that the increased demand for this metal does not raise the price. As yet, aluminum has been used only for transmission lines where the larger size as compared with copper, which is necessary to give the same conductivity, is not a disadvantage. For certain classes of work there is no metal which is likely to replace the latter. Although the increase in the demand for copper is sending the price up, there does not seem to be much danger that the producing companies will not meet these demands, for some time at least. Improvements recently made at the large Montana works have greatly increased their productive capacity, and the aluminum works also could probably put out a great deal more metal if it were demanded.

"Modern Practice of the Electric Telegraph," although not a new publication, nevertheless fully maintains its value as an excellent technical handbook for electricians, for telegraph managers and for operators. The fact that numerous editions of the book have been issued proclaims its intrinsic worth. The author, the late Franklin Leonard Pope, was a former president of the American Institute of Electrical Engineers, a member of the Institution of Electrical Engineers of London, an old-time telegrapher, and a writer of marked ability. The volume embraces 234 pages, has 185 illustrations and is fully indexed. Price, \$1.50, postpaid. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

Personal Experiences of Telegraphers at San Francisco at the Time of the Earthquake and Fire.

J. W. Whiteley, of the Western Union Telegraph Company, San Francisco, has this story to tell:

The morning of April 18 I was on duty in the Western Union building, at the corner of Pine and Montgomery streets. I had just completed taking signals from Reno at 5.11 or thereabouts, and desiring to go over to the Los Angeles wire and take signals from that place, I had just risen from my chair for the purpose when the earthquake occurred. This was a new shake to me; it seemed distinctly different from the shakes I used to receive from my mother several years ago. Glancing at the dynamos I thought they were in some kind of trouble, not being familiar with the peculiar antics they were performing, due to the violent vibration. At this moment the ceiling fell on the chair I had just vacated. Then followed a general upheaval of the room. The clock fell from the wall and the office was swayed by a peculiar rocking motion. I observed Mr. Lowery, our all-night chief operator, and Mr. Melville, the cable operator, dodging debris, and Mr. Lowery said to me, "I guess that's one." We none of us had to "guess" what the trouble was, its real meaning was intuitive. Mr. Lowery was optimistic in his view of the earthquake, and thought it would soon be over, but this shake was a record breaker, and to our excited minds it seemed to have no end. I didn't get a chance to "break" either, for I knew the sender wouldn't let me break. But to save my head from possible breakage, from contact with falling mortar, I thrust it as far out of one of the windows as possible. When the building stopped shaking there came a vigorous call from Oakland wanting to know how serious the situation was in San Francisco. I had time only to answer, when the whole set of wires went out of commission. I then made an inspection of the building, and was inclined to believe that the trouble was all over, so went back to the operating room. At this instant another shock came, and I thought that's "30," I will close the shop right now. I saw the wrecked condition of the receiving office down stairs, so I consulted Mr. Lowery as to my protecting the room until Mr. O'Brien, our manager, came. I hadn't been there long when people came thick and fast to send messages to their Eastern friends informing them that they were still on earth. I had a rough house for three hours taking in messages and talking all the time. I told the customers that everything would be accepted subject to serious delay, but my personal opinion was that we could get the business off some way later on. I told them, first come, first served, and you ought to have seen them trying to get to me. I held the crowd until Mr. O'Brien arrived, when I turned the whole business over to him, as I had had

enough for one day, having worked from midnight telegraphing and wrestling with earthquakes, besides having acting as counter clerk for three hours. I turned my business over, together with all cash, to Mr. O'Brien, and then left for home, but on my way out another shake happened and the crowd pushed ahead of me out through the door. Arriving outside I observed a man coming across the street who actually dropped in a fit of apoplexy, and died in a few minutes without being able to receive help from any source, due to the excitement. I then went through the town and saw the fires and finally heard that Mr. Jeffs had a telegraph office at Oakland. I managed to get through the lines by the assistance of a lieutenant of the regular army, who got me to the ferry, via Dupont street and Broadway, arriving at West Oakland about 9 p.m., where I worked all night.

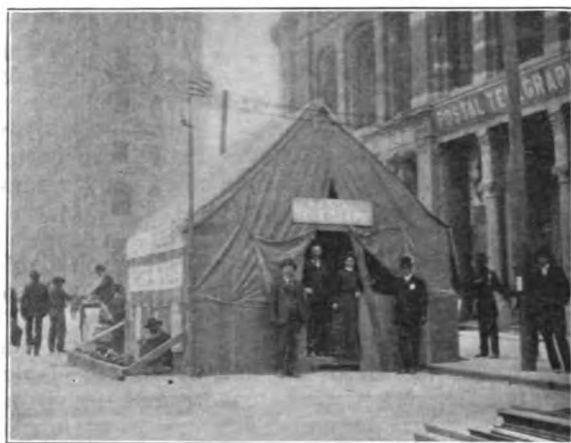
I have been asked often was I scared. Frankly, I don't know, for I have been too busy ever since working for the best telegraph company in the world, and who have treated me better than I ever was treated during my twenty years' experience as a telegraph operator.

Mr. A. J. Esken, of the Postal Telegraph-Cable Company, San Francisco, writing under date of May 29, says:

I reached the office about 6.30 a. m. on the morning of the great disaster, April 18. Chief Operator Arnberger had just rigged up some gravity batteries, and in a few minutes we had three single wires going to Chicago and one to Los Angeles. These wires were manned by J. A. Welker, Frank Seaman, Izzy Elberg and myself. Before we were ordered out of the building, at 11.15 a. m., I managed to send about five thousand words of press matter, which, no doubt, was the first authentic and reliable story of the terrible state of affairs prevailing in San Francisco at that time to reach the outside world. The other boys did equally well on personal telegrams and some press matter. While we were working there, we had several severe shakes, which brought down plaster and brick all around us. About 10.30 a.m. we had an unusually heavy shock. Everybody made a rush for the street. In jumping up I knocked my chair over, and the noise of its fall accelerated the speed of those who had already started. It was a long way to the street, so I just stood up close beside one of the large supporting pillars that reached from the floor to the ceiling, thinking that if the building was coming down I might stand a better show there than anywhere else. However, nothing more than a few more bricks and some mortar fell through the skylights, so I was back to the instrument again before the rest of the boys returned. And thus we worked until we were ordered out of the building. To the east of us the fire was only half a block distant—right in our own block. To the west, the "Call" building was burning, which was just one block away.

While sitting at my instrument, working by candle light, the reporters were passing in and out. Part of the time I had copy (I am speaking for myself—I was too busy to know what the other three operators were doing); at other times I was sending from dictation, and sometimes I had to fill in from my own experience and memory. Taking everything into consideration, I believe those were the busiest hours of my life.

Our office was a total wreck. There were four skylights in the ceiling, and tons upon tons of bricks, mortar and stone had fallen from the top of the ten-story Union Trust building adjoining, right down into the operating room, crushing our heavy tables as if they had been



THE FIRST POSTAL OFFICE IN SAN FRANCISCO TO OPEN FOR BUSINESS AFTER THE GREAT DISASTER OF APRIL 18.

The figures are: Vice-President E. C. Bradley at the right; General Superintendent L. W. Storrer at the left; Miss A. D. Keenan and T. S. Cunningham at the threshold of the tent. The first message sent from this office was on April 25.

made of paper. Amid such surroundings was where we had to work, and during the time we were there we had at least half a dozen additional shakes that simply made one's hair stand on end. Of course, the big shock at 5.13 put us all on "queer street," and, naturally, it wouldn't take much more to stampede the crowd. However, to me it seemed that we were there to do the work required of us and we did it. There was no flinching from any one, but along toward the last I noticed that there was quite a thinning out among the people who had been standing around. Finally I ran out of copy, and when I glanced up and looked around there was no one in sight but Mr. Seaman. Just then Mr. Arnberger came running in and told us to get out, that the building was going. We grabbed our typewriters and left without further ceremony.

The service was immediately taken up by our Oakland office, and the wires manned, with scarcely a moment's interruption, after we were forced to abandon the San Francisco office. Under the supervision of Electrician W. C. Swain, all of our dynamos and other valuable equipment were saved, and later installed in the Oakland

office. When we reached the sidewalk in our exit from the building, we beheld a scene that was simply appalling. From Kearney street west, including the "Call" Building, as far as the eye could reach, and from four or five doors east of our office clear to the ferry, was one mass of flame. It was a sight that no one can ever forget. On the Friday afternoon following, while still in the neighborhood, I was ordered by a soldier to go up on the fire line and help carry a hose that had been run up from a fire-boat in the bay. It was hard and hot work, but it meant instant death to disobey orders then. Everybody, including "Father," was working. That night I was called upon to do patrol duty. It was sort of a citizens' patrol. We were supposed to see that no one had a light of any sort in his house. This precaution, of course, was to prevent the possibility of fire starting in the unburned district.

On Saturday I reached Oakland, where I found the office simply swamped with business, and everybody working to his or her full capacity. No one even thought of stopping a moment, unless some one was there to take one's place the instant it was vacated. Everybody that applied was put to work, but still there seemed to be no rest for anyone employed. On April 26, Mr. C. R. Worman and R. A. Ditch arrived here from Chicago, and on May 1 Messrs. C. R. James, J. F. Seaman, R. A. Wilson, J. R. Eberhart, W. B. Scoffin, all of Chicago, and Mr. E. B. Boyden, of Kansas City, were added to the force, having been sent here by General Superintendent E. J. Nally, of Chicago, to help us out. You may be sure we were glad to see them. They have all since returned to their respective homes, except Mr. Wormer and Mr. Boyden, who have decided to remain here permanently.

So far as our business is concerned, we are down to the normal again. We have several offices already established in San Francisco, and will have more soon, the most important of which will be located in the ferry building. This will practically be the main office until such time as more permanent quarters can be secured.

The following were sufferers by fire and earthquake, and the losses range from fifty to two thousand dollars each: Wm. W. McCandlish, J. D. Saxe, A. J. Phillips, David St. Charles, Charles House, George B. Abbott, J. L. Irish, Frank W. Seaman, Frank Howard, C. F. Orr, A. J. McAlister, Miss Powell, Charles Greenslade and myself.

There was no way for us to save our furniture, etc.; the best we could do was to take what clothing could be carried in our grips and suit cases. It was impossible to hire a wagon after the first day of the fire, unless one was a millionaire.

On May 27 the Commercial Telegraphers' Union of America distributed more than two thousand dollars, which had been donated by outside

locals of that organization, to their San Francisco brethren who had been rendered homeless by the earthquake and fire.

San Francisco reminds me of a big ant hill that has been kicked over. The ants run around like wild until they see what damage has been done, then they all pitch in and help build it up again. That is what the people of San Francisco are doing now.

It was remarkable with what fortitude men stood by and saw their property go up in smoke. It is my private opinion, however, that the majority of the people were so thankful to be alive after the earthquake that the mere burning of the town had no terrors for them. My own feeling will bear me out in this respect.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

ST. LOUIS, WESTERN UNION.

The wife of Larry N. Boone, ex-chief operator, died at her home, Webster Grove, Mo., June 2.

Mr. Joseph E. Dunlap, chief clerk of the operating department, was married to Miss Ora Love on June 6.

A company composed of operators, terming themselves "The Magnetics," gave a trolley party May 18. Among those present were: Messrs. B. A. Levin, Joseph E. Dunlap, J. J. McCruden, Worth Rogers, Paul Rainey, A. J. Gorosky; and Misses Ora Love, Evaline Deming, Laura McKnight, Irene Stenson, Agnes Hickey and Ethel Platt.

A lawn party will be given at the residence of Mr. Joseph E. Barry by the telegraphers of this office, on Saturday, June 16, at which refreshments will be served and a musical programme rendered.

Mr. J. J. Lane and F. E. Godfrey have returned from their vacation.

The Western Union Baseball Club recently defeated the Postal Telegraph-Cable Company in three straight games.

This office has now erected a telephone private exchange which is connected with nearly every department, Miss B. Fischer operating same.

Miss Cherry Maginnis is doing the stenographic work for the Missouri District Telegraph Company delivery department.

Mr. B. F. Ragsdale, our Chicago bonus man,

also Arnold Mackler, the record-breaking man who works bonus, left here to work in New York.

PHILADELPHIA, POSTAL.

The sympathy of everyone in the office goes out to Joe Beasley, who is mourning the loss of his mother.

Mr. Len. Greiner, manager of the Drexel Building office, after enduring a long season of inconvenience due to lack of sufficient help, has had his working staff completed. Mr. Edmund Miller, a former Postal branch-office man, has been appointed to assist Mr. Greiner.

R. C. Mecredy, of the Commercial Exchange office, is enjoying the comforts of a "cottage by the sea." He will have his home in Atlantic City for the summer season.

PHILADELPHIA, WESTERN UNION.

S. S. Peck and Miss Chrystie Dennis, both well known here, were quietly married about a month ago. So well was the secret kept that it has but just recently leaked out.

A game of baseball between operators of this office and the linemen was played recently, the latter being victorious by a score of 15 to 3. The outdoor life of the linemen was greatly in their favor, notwithstanding that our key pounders were the most expert, but they could not stand the pace. The day after the poor operators looked like boiled lobsters on account of the sun exposure, while the linemen showed no signs of it at all. Moral: Be a lineman and enjoy a long life.

Recent arrivals are: Messrs. Dabney, Potts, McLaughlin, Behan, Kramer and Snyder. Departures: Messrs. Seeley and H. Carr, the latter returning to his home in Sumter, S.C.

Mr. Kalmey, who looked after the Western Union business at the Evening Telegraph, has been added to the staff of that paper. Charles Unruh succeeds Mr. Kalmey.

NEW YORK, WESTERN UNION.

Announcements are out for the wedding of Chief S. S. Ferris and Miss Huss, of Harlem.

Miss Clara Ayers, who has been working a leased wire, at the Cotton Exchange, has returned to this office.

Miss Alice Lemaire, has resigned and accepted a position with the Long Island Railroad.

Miss Agnes Sullivan has returned to this office, having resigned an outside assignment.

Mr. A. A. Offutt, of the Eastern division has resumed duty, having fully recovered from his recent illness.

Mr. Joseph Dion has returned from California, after a very pleasant trip in the southern portion of the Golden State.

The Rev. John S. Willis, formerly of this department, was ordained to the priesthood at St. Joseph's Cathedral, Buffalo, N. Y., on Saturday, June 9, and celebrated his first mass at St. Joseph's Church, Brooklyn, N. Y., on Sunday,

June 10, many of his friends in the telegraph profession being present. Father Willis has been assigned to a parish in Erie, Penn.

Mr. Robert H. Smith, of the Eastern division, who is an expert photographer, secured a beautiful picture of the Morse statue, in Central Park, on Memorial Day. On the reverse side of the photograph is an article from *Telegraph Age*, likewise an original poem by Mr. Marion H. Kerner. The pictures were presented to members of the Morse Club.

Mr. E. C. Watkins, of this office, Master Civic Lodge, F. and A. M., was presented, June 7, with a handsome testimonial, as a token of esteem.

The annual fishing excursion of the Western Union employees will take place June 17. The company has kindly placed their sea-going tug, Western Union, at the disposal of their employees for the occasion.

The wedding of Miss Mabel Irene Jones, daughter of Mr. Willis H. Jones, and Mr. Albert H. Cleveland, of Woodbridge, N. J., occurred at the home of the bride's parents, Hasbrouck Heights, N. J., on June 2.

The Missouri Pacific Baseball Club, commonly called the "Mops," and representative of 195 Broadway, has been reorganized for the season of 1906 under the management of Joseph W. Connolly, of the Western Union treasurer's office, and Daniel J. Gallagher, assistant manager of the Missouri Pacific Railway Company. Franklin J. Scherrer, who successfully managed the team last season, declined a re-election, owing to pressure of business. The other officers of the team are: William A. Hamilton, treasurer; Geo. W. Bastedo, financial secretary, and Chas. Conlon, secretary. The club has leased the Paramount Field, at Metropolitan and Morgan avenues, Brooklyn, and are now meeting the leading semi-professional clubs, not yet having suffered a defeat. Out of town teams wishing to book the "Mops" away from home should address Jos. W. Connolly, P. O. Box 1798, New York.

Mr. P. J. Casey, manager of the Twenty-third street district, has again assumed the management of the company's interests for the season at West End, Long Branch, N. J. Mr. Martin Durivan, a chief operator in the New York main office, has been assigned to his accustomed place for the summer in the Long Branch office as chief operator.

The general harmony and good fellowship prevailing at the Central Cable office is shown by the staff getting together and arranging to have an outing to some seaside resort this summer. Already there are over fifty persons who have subscribed toward defraying the expenses. A very enjoyable time is looked forward to.

Manager B. H. Reynolds, of the Central Cable office, has started a school of instruction for those desiring to fully equip themselves for every branch of telegraph engineering, and already several have entered the preliminary studies. The

student who finally passes the most successful examination will be presented with a scholarship in one of the largest schools in the country.

My Motto—Honorable Dealing.

My specialty factory rebuilt Remington and Smith "mills" at reasonable prices. New York representatives for sale of the new model No. 3 Mecograph. Apply to me for terms, circulars, etc. D. A. Mahoney, 253 Broadway, New York.

NEW YORK, POSTAL.

Operator R. F. Stewart has been promoted to the position of assistant traffic chief in the western division.

Arrivals: Eugene Reilly, Jacob Mandel, Mr. and Mrs. E. M. Wood, Elias Weinstock, J. W. Anderson, Miss G. Firns, F. W. Dougherty, N. I. Taylor, George Perkins, Jacob Brandenburg, H. B. Bingham, Samuel Schuman, Thomas Murray and A. Freedman.

The death is announced of the wife of J. F. Carr.

Departures: C. Osterburg, A. Shannon, G. M. Farrel, V. C. Frost, H. A. Goodwin, J. A. McDermott, W. Parker and A. V. Schermerhorn; J. P. Karens to health department, New York, as an inspector; D. W. Cusack has been appointed observer in the marine department, and stationed at City Island; Margaret Grey, to Asbury Park.

D. C. Murphy went away for an indefinite leave of absence on June 15. R. I. McOver resigned on the 11th, and William Parker on the 8th of June.

On June 10 a party from this office who, with a number of friends, went sailing on Long Island Sound, met with a serious mishap. After a day of pleasure, a severe storm arose and the frail yacht in which the party were embarked, while on their homeward trip, was struck by the heavy seas and became unmanageable. The entire party, however, effected their escape by means of the life boats, and made a landing at Whitestone, L. I. Later the yacht was beached. Those from this office among the excursionists were: Robert Stuart, P. O. Purcell, M. M. Melville, Albert Ward, John Smith, Arthur Duffy, Sebastian Roggerio, George Weiser and L. M. Harding.

OTHER NEW YORK ITEMS.

The New York local of the Commercial Telegraphers' Union of America during the summer season will hold its monthly meetings at Borough Park Club House, Forty-ninth street, Brooklyn, N. Y.

The office of Mr. John Brant, secretary of the Old Time Telegraphers' and Historical Association, has been permanently located on the second floor of the No. 8 Dey street section of the building.

Mr. S. J. Small, president of the Commercial Telegraphers' Union of America, was a recent New York visitor.

The International Telegraph Tournament at Boston.

The arrangements for the telegraphic tournament to be held in Boston on June 29 have reached that stage where it is now possible to announce the different classes, and a part of the prizes. As the affair is one of charity, pure and simple, and not for personal or corporate gain, the committee has received loyal support from the generous friends of the profession, and the first prizes already contributed have a high intrinsic value. To these will be added liberal second prizes, and if funds permit there will also be cash prizes.

It is found that nearly all contestants expect cash prizes, arguing that their expenses are so great that they are compelled to look in that direction. As an offset of this, the committee is able to make an important announcement. Through the generosity of a friend of the operators, the committee agrees to furnish to every bona fide entrant, when endorsed by his manager that he is competent to compete in a speed contest, free railroad transportation to Boston and return. Besides this, arrangements have been made with the managers of the Quincy House for a greatly reduced rate for contestants and visitors to Boston and the tournament.

The plans for entertaining visiting friends are being handled by a special committee. On Thursday night, June 28, there will be a banquet at the Quincy House in their honor. On Saturday, the day following the tournament, on invitation of Mayor John F. Fitzgerald, the visitors will be taken on an extended trip around Boston harbor and Massachusetts bay on the city's steamer, the "Cormorant."

LIST OF EVENTS.

Carnegie International Trophy for the Championship of the World.—First, second and third winners in the team match, broker and press classes, will be credited with five, three and one points, respectively, and the competitors winning the greatest number of points will be presented with the Carnegie cup, valued at \$250.

Railroad Operators.—Open only to operators who have been in actual railroad work for the past two years or more. Each entry must be endorsed by the division operator or superintendent under whom the entrant was employed.

Class A.—Sending 20 ordinary railroad messages. First prize—Latest model typewriter, donated by the Smith Premier Typewriter Company; second prize to be announced later.

Class B.—Receiving 20 ordinary railroad messages on typewriter. First prize—Latest model typewriter, donated by the Remington Typewriter Company; second prize to be announced later.

Broker class.—Open event; sending regular brokerage and financial business ten minutes. First prize.—Solid silver punch bowl, valued at

\$150, donated by the Boston News Bureau; second prize to be announced later.

Team Match.—Open event for teams of two men; sending and receiving twenty-five regular commercial messages. Decision to be made on speed and general appearance of receiver's work. Postal Telegraph-Cable Company rules as to "style" to govern this contest. Sample of "style" in the "General Rules" mentioned herewith.

Two first prizes—Handsome solid silver cups to sender and receiver.

Two second prizes—Solid silver cups to sender and receiver.

Cups donated by Clarence H. Mackay, president of the Postal Telegraph-Cable Company.

Press work; open event.

Class A.—Sending 350 words press matter, straight. First prize—\$100 in gold, donated by the Boston Herald; second prize to be announced later.

Class B.—Receiving 350 words press matter, straight. First prize—Chest of solid silver, value \$150; donated by Charles H. Taylor, the Boston Globe; second prize to be announced later.

Class C.—Receiving 500 words press matter, code. First prize, \$100; donated by the Boston American; second prize to be announced later.

RULES FOR GOVERNMENT OF CONTESTS.

No contestant will be allowed in the main auditorium during the time a class in which he is an entrant is in progress. This rule is made necessary because it is deemed unfair for any operator to be within sight or hearing of copy with which he is to compete before he has handled the same. Each contestant must remain in one of the two rooms set apart for their use, and must be ready to take his place in competition instantly, when called. Any contestant detected violating this rule will be disqualified from competing in the particular event in question.

The entrance fee for each class will be \$2, and must accompany the entry. Entries close on Friday, June 22.

In the "team match" the Postal Telegraph-Cable Company rules to govern. The following copy is the Postal "style" of "received" messages, and all copy will be judged by this standard:

a2IB z 2I 3p.

Boston, Mass., June 29, 1906.

MR. C. F. ADAMS,

Chicago, Ill.

This paid telegram is "Postal" standard copy. The upper or lower case may be used as desired in the top line.

HENRY HOLDEN.

It will be noted in this copy that the word "paid" is not used and will not be sent. When the telegram is "collect" the word may be sent "col." but the receiver must spell it out in full.

The office call "B" will be used on all messages in the "team match," and must follow the message number, that is, "a2IB." This will not

be sent but must appear on all "received" copy. The circuit number "a" will precede the message number. Upper or lower case may be used on this entire line at discretion of receiver.

A facsimile of Postal "style" will be mailed with each entry blank.

All messages in the afternoon contests will be timed "3 p.;" in the evening "9 p."

In the press and broker sending classes: Sending—Accuracy in the formation of characters, and speed, will determine the winners in this class. Press receiving—In both "straight" and "code" classes, a comparison of "received copy" with original will determine the winners.

Recent Telegraph Patents.

A patent, No. 821,733, for a telegraph pole, has been secured by Duncan W. Peck, of Syracuse, N. Y. A form of hollow metallic pole with swinging arm for the conductor is specified.

A patent, No. 821,623, for storage-battery-filling apparatus, has been granted to Thomas A. Edison, of Llewellyn Park, N.J. An apparatus for filling metallic storage-battery pans is described.

A patent, No. 820,977, for electric telegraphy, has been taken out by Isidor Kitsee, of Philadelphia, Pa. A receiving device comprises a polarized relay connected to the line and ground, respectively. A normally closed local circuit embodying an electromagnet is provided with a resistance, a shunt around the resistance and means at the relay to open and close the shunt.

A patent, No. 821,506, for electric telegraphy, has been obtained by Isidor Kitsee, of Philadelphia, Pa. In a system of telegraphy are two sources of current, one of higher electromotive force than the other, the sources oppositely connected to each other, and means to shunt the source of higher electromotive force, the shunt embracing a transmitting key and a resistance.

A patent, No. 821,043, for a telegraphic transmitting device, has been issued to Isidor Kitsee, of Philadelphia, Pa. A transmitting device to be used with submarine telegraphy, the object being to obtain alternating impulses by an ordinary form of transmitting key. A local sounder controls an escapement of a clock train mechanism which serves to produce the desired signals.

A patent, No. 820,652, for a telegraphic system, has been awarded to Jacob W. Lattig, West Bethlehem, and Charles L. Goodrum, Philadelphia, Pa., and Edward E. Clement, Washington, D. C. A system of telegraphic communication adapted to railway work embodies a continuous conductor which is kept in touch with the train apparatus by a traveling contact. Occupants of the train are enabled by the apparatus to talk over the telephonic circuit while the train is in motion.

A patent, No. 821,624, for a gas separator for storage batteries, has been obtained by Thomas

A. Edison, of Llewellyn Park, N.J. The process of removing soluble impurities from alkaline storage batteries employing conducting receptacles of an insoluble metal consists in connecting the depolarizing mass as a cathode in circuit with the conducting receptacle in an alkaline solution, in passing a reverse current between the two to heat the solution and generate hydrogen gas in the active mass, and in finally pouring off the solution.

A patent, No. 821,741, for telegraphy, has been issued to Michael I. Pupin, of New York. Combined with a main line are means for throwing several electromotive forces of different frequencies onto the main line through transformers having cores which form closed magnetic circuits and having a large magnetic leakage, selective parts connected to the main line, and means for tuning each selective part to respond to one of the electromotive forces thrown upon the main line.

The following patent has expired: Patent No. 404,165, for a telegraph system, held by John Barry, New York.

General Mention.

"It's money well invested," is what Mr. E. A. Chenery, superintendent of telegraph of the Missouri Pacific Railroad, St. Louis, Mo., regards a subscription to TELEGRAPH AGE.

The messenger boys in one of the offices in Syracuse, N. Y., went on strike recently because the company would not pay them off on Saturday instead of on Monday, the regular day of monthly payments happening to fall on Sunday.

Mr. W. H. Stansell, manager of the Postal Telegraph-Cable Company, Charlottesville, Va., has this to say regarding his professional paper: "I note my subscription has expired. Enclosed find check for which please renew. I must have TELEGRAPH AGE in order to keep myself posted on my calling."

The Magnetic Club will celebrate its regular summer outing at Cove Hotel, West New Brighton, Livingston station, Staten Island, on Tuesday, June 19. These meetings have become such an established feature in the annual plan of entertainment provided by the club, and furnish such a delightful means of open-air social recreation, that members and their friends look forward to its recurrence with much pleasure. As usual, the cable steamer "Western Union," belonging to the Western Union Telegraph Company, will be placed at the disposal of the club and will make two trips for the conveyance of members to the grounds, one at 1.45 and the other at 3.45 on the afternoon of the 19th inst., starting from the foot of Cortlandt street. Dinner will be served at seven o'clock. The programme of entertainment will include a game of baseball and other outdoor sports of an athletic character, at which prizes will be awarded.

The Great North Western Telegraph Company of Canada

H. P. DWIGHT,
President.

I. McMICHAEL,
Vice-Pres. and Genl. Mgr.

Head Office: **TORONTO**

**DIRECT WIRES TO ALL PRINCIPAL
POINTS**

**EXCLUSIVE CONNECTION IN THE
UNITED STATES WITH THE WESTERN
UNION TELEGRAPH COMPANY.**

**DIRECT CONNECTION WITH THREE
ATLANTIC CABLE STATIONS.**

The Great North Western Telegraph Company has a larger number of exclusive offices than any other telegraph company in Canada, and its lines reach 49,280 offices in Canada, United States and Mexico.

**DOMESTIC AND FOREIGN MONEY
ORDERS BY TELEGRAPH AND CABLE.**

HOUSTON, TEXAS

A rapidly growing territory looks to Houston for supplies. The surrounding country produces all kinds of crops adapted to semi-tropical and temperate regions. The average soils produce 85 to 100 bushels of Irish and 150 to 300 bushels of sweet potatoes per acre. Leads in production of high grade rice, sugar cane, cotton, corn, sorghum, oats, hay, melons, cabbage, cauliflower, tomatoes, and in fact every variety of vegetables. Unimproved prairie lands adjoining railroads can be bought for \$10 to \$20 per acre; improved lands, \$25 to \$40 per acre. Houston has 27 public schools, including fine high schools; 31 private schools and colleges, affording excellent educational facilities. The William M. Rice Institute, with an endowment of over \$5,000,000, will soon be under construction, and will rank with the greatest Universities in the land.

In this progressive city is located one of the best equipped and busiest offices of the Postal Telegraph-Cable Company of Texas.

THE Canadian Pacific R'y Co's Telegraph

Executive Offices, Montreal
JAS. KENT, Manager

The Largest Telegraph System in Canada
63454 miles of wire; 1860 offices.

**DIRECT CONNECTION WITH
POSTAL TELEGRAPH-CABLE COMPANY
COMMERCIAL CABLE COMPANY
HALIFAX-BERMUDA AND DIRECT WEST
INDIES CABLE COMPANY
NEWFOUNDLAND GOVERNMENT SYSTEM
UNITED STATES AND HAYTI CABLE
COMPANY
BRITISH PACIFIC CABLES
COMMERCIAL PACIFIC CABLE
DOMINION GOVERNMENT LINES TO THE
YUKON**

Direct Through Wires to All Parts of
CANADA
NEW YORK CHICAGO SAN FRANCISCO
BOSTON, ETC.

The North American Telegraph Company.

Organized 1886.

GENERAL OFFICES, MINNEAPOLIS, MINN.

H. A. TUTTLE,
Sec'y and Gen'l Manager.

CLINTON MORRISON,
President.

Its lines extend through the States of
Minnesota, Wisconsin, Iowa and Illinois.

Connecting with the
POSTAL TELEGRAPH-CABLE CO.,
and the
COMMERCIAL CABLE COMPANY

Exclusive direct connection with the telegraph lines of the Minneapolis, St. Paul and Sault Ste. Marie Railway Company.

Death of the Doyen of the English Cables and Telegraphs.

In the death of W. S. Andrews, which occurred in England on May 8, the telegraph and cable interests of that country has lost another of its pioneers. He was seventy-four years of age and began his telegraphic career in 1848. He had taken an extremely active part in the development of telegraph enterprises up to 1902, when he resigned the chairmanship of the Western Telegraph Company, retaining, however, his directorship of that company and the Platino-Brazilian and River Plate Telegraph companies until 1904. It was, however, with the management of the Indo-European Telegraph Company that Mr. Andrews was so closely associated from its earliest days until his retirement from the board last year. He has been responsible for many inventions, some of which have been patented and have met with considerable success. He was regarded as the doyen of telegraphy in England, and there is no man living who can point to more varied and interesting work in connection with this subject. The first serious work of Mr. Andrews' business career was of a literary character. A constant student in the engineering branch of telegraphy, he commenced in the early fifties by accepting the post of acting engineer to the Submarine Telegraph Company. This position he retained for eight years and then took charge of the repairing ship attached to submarine telegraph work for the Danish Government, and other work of similar character. During this period he was London secretary to the British and Irish Magnetic Telegraph Company, and gave assistance in extending telegraph communication with the continent, and particularly simplifying charges. In the fifties both the cables belonging to the Submarine Telegraph Company were broken, and these repairs were effected by Mr. Andrews. This was considered at the time a feat of some magnitude. Mr. Andrews joined the United Kingdom Telegraph Company in 1860 as manager and secretary, later on taking up the duties of electrician and engineer. When the British Electric Telegraph Company went into liquidation on its amalgamation with the British and Irish Telegraph Company, Mr. Andrews was appointed official liquidator and occupied that position for three years. At the date of the transfer of the telegraph to the Government in 1870 the ownership of the telegraphs was in the hands of three companies, the Electric Telegraph Company, the British and Irish Company, and the United Kingdom Company, plus one or two smaller and less important undertakings. The terms which were discussed by the postoffice representatives were formulated by Mr. Andrews, were accepted and were finally embodied in the bill without material alteration, and speedily became law. In 1870, after the transfer of the home telegraphs to the Government, Mr. Andrews

joined the Indo-European Telegraph Company as manager and secretary, and later (in 1884), in recognition of his services, he was appointed managing director with a seat on the board. In its early days the Indo company found a difficulty in earning sufficient revenue to cover expenses, and it was Mr. Andrews' work to bring about a reduction of various out-payments made to the government in connection with land lines in England. These and other negotiations with the object of reducing the standing charges proved successful, and the Indo-European Company became a thoroughly sound and regular dividend-earning concern. In the subject of the protection of submarine telegraph cables from careless and wanton damage, Mr. Andrews has taken a lively interest, and as representative of the Indo-European and other companies at the International Telegraph Conferences which have been held from time to time in the chief capitals of the world he has, in association with other distinguished representatives of British submarine telegraph cable enterprise, shared in protecting successfully the interests of the companies. After thirty years of active service Mr. Andrews retired at the end of 1899 from the post of managing director of the Indo-European Company. His latest work in that position was to procure an extension of the company's Russian and Persian concessions for a further period of twenty years. In 1887 he was elected a director of the Western and Brazilian Telegraph Company, and in 1888 became chairman of the company. In 1898 the amalgamation of the Western and Brazilian Company and the Brazilian Submarine Company took place, and Mr. Andrews became chairman of the combined undertaking registered as the Western Telegraph Company, a position he retained until his resignation in 1902. Mr. Andrews joined the West India and Panama Company in 1874, and became its chairman on the death of Mr. Earle in 1897. In 1895 the Amazon Telegraph Company was established, and Mr. Andrews was elected chairman. Mr. Andrews received recognition from the Persian Government in connection with his management of the Indo-European Company's service, by the Shah having conferred upon him the distinction of a Grand Officer of the Second Class of the Lion and the Sun.

The bill for the state supervision of telephone and telegraph companies in Massachusetts has received the signature of the governor, and the members of the state highway commission are to take on themselves the duties of supervising the telephone and telegraph business of that state, and are to each receive \$1,500 a year additional salary for that work.

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The Western Union Telegraph Company recently moved their repeater office at Ashland, Oregon, into new and spacious quarters, the change being made on April 15, by Electrician H. S. Converse, of San Francisco, and General Foreman Eckleshaw, of Seattle. The office is handsomely furnished with new tables, switchboards and all modern apparatus, and large plate glass windows furnish excellent light. Six sets of quadruplex, four polar duplexes, single repeaters and several half-sets complete the equipment. The 3,500 cells of gravity battery are shortly to be replaced by a storage battery plant. This office is the most southerly of the Seattle district, of which Mr. R. T. Reid, of that city, is superintendent. Three copper wires north and three south, as well as two duplex wires, two way wires, and four Southern Pacific Railroad division and message wires for Sacramento and Roseburg districts are either repeated or provided with battery from this point. A large and well-lighted battery room on the ground floor is a feature of this new office, which is easily the best housed of any repeater station on the Pacific Coast. The office is in charge of Geo. G. Eubanks, days; Geo. F. Wilson, nights; the battery man being G. H. Hedberg.

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Members of the International Association of Municipal Electricians are looking forward with a good deal of interest to the forthcoming convention of that body at New Haven, Conn., for a fine programme governing the affair is to be carried out. The names of the papers to be read were printed in the issue of May 1. The social side of the meeting will not lack in attractiveness, and as the Nutmeg City is delightful for situation on Long Island Sound, with beautiful scenery on the land sides, there is no doubt that the visiting electricians will have a good time. The dates fixed for the convention are August 15, 16 and 17.

One of the night American District Telegraph operators, who has charge of the burglar department of that company in a city not very distant from New York, had his house robbed during the day while he was asleep.

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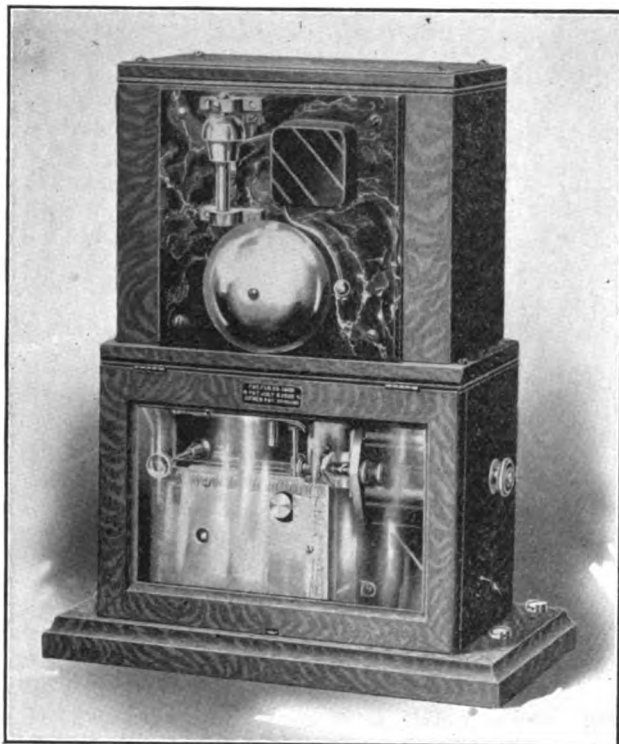
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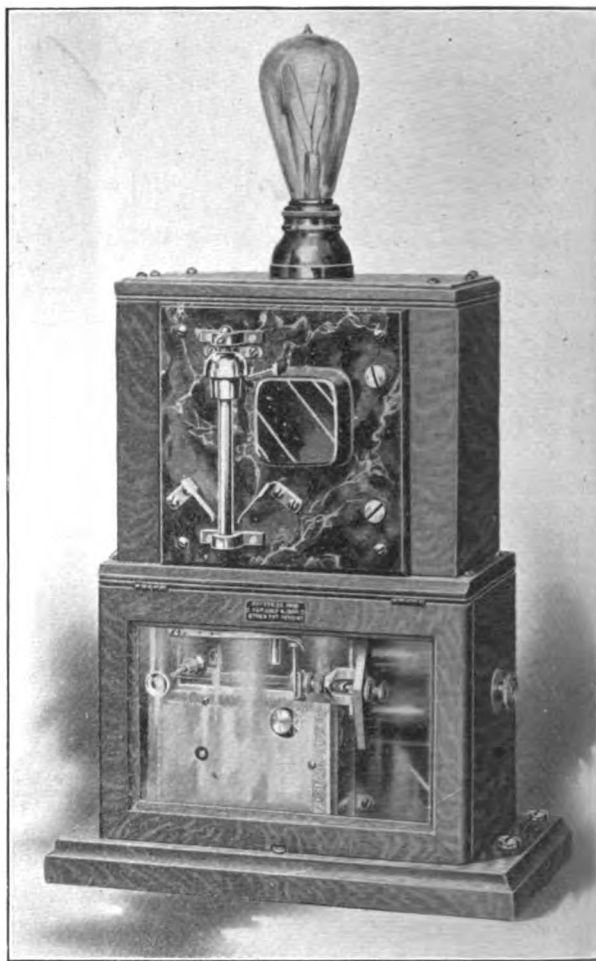
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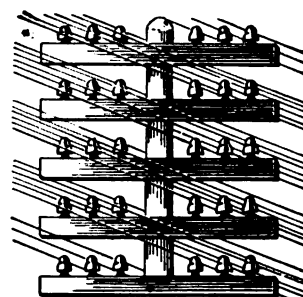
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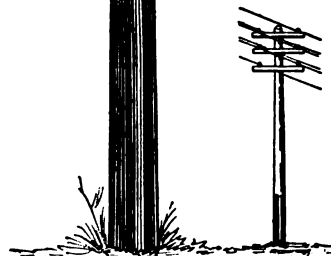
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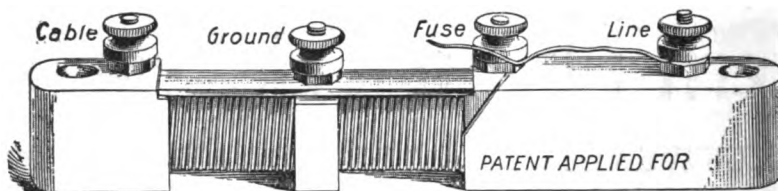
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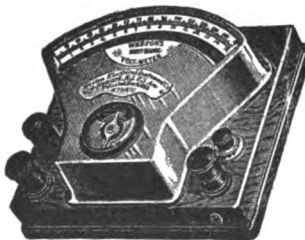
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1883

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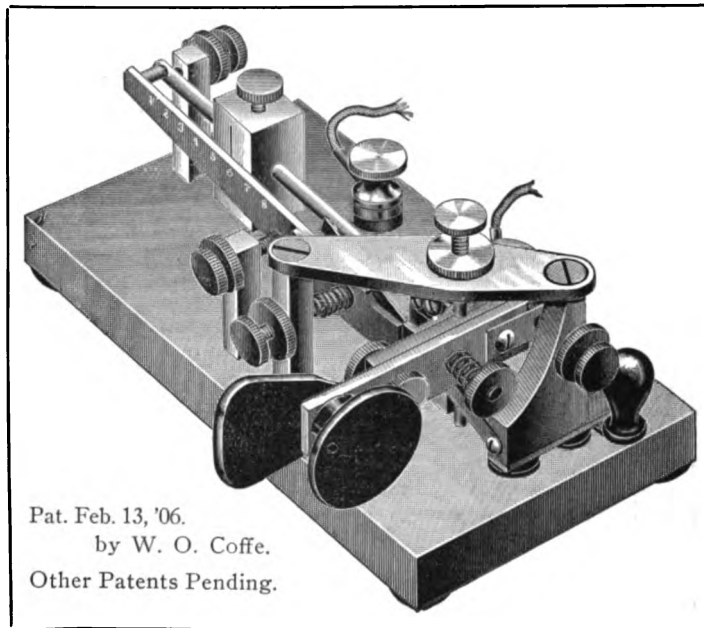
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SOME POINTS ON ELECTRICITY.

Induction, Leakage, Crossfire.

BY WILLIS H. JONES.

The question as to whether "induction" is greater in dry weather than in wet weather having been discussed pro and con between a number of quadruplex chiefs, without resulting in any definite decision being reached, this journal has been requested to state the probable facts in the matter.

In the first place we desire to say that the word "induction" is a much misused term among telegraphers generally, and by laymen particularly so. Induction is usually credited with being the source of nearly every foreign and inexplicable disturbing influence noticed in cables and pole-line parallel conductors.

The term induction is probably most frequently misapplied in connection with "leakage" or so-called "crossfire" effects, which latter are particularly noticeable in wet weather. Because of this common error and confusion of terms, the impression is quite general among the uninformed that induction is greater in wet than in dry weather. The fact is, induction proper is decidedly greatest in clear dry weather, as will be apparent after a better understanding of the meaning of the term has been arrived at. The effect in telegraph circuits produced by induction is so similar in many respects to that due to

leakage or crossfire that it is often difficult to readily distinguish one source from the other, yet the two actions both originate and operate in an entirely different manner.

INDUCTION.

One of the fundamental characteristics of active electricity, whether in the guise of polarity, current, or its offspring, magnetic flux, is its tendency to do some kind of work. Thus, for instance, and in line with the subject, it has been found that parallel currents of electricity flowing in separate conductors repel or attract each other, according to direction or polarity. This interaction through intervening space, or work done between different individual currents, results in the development of a separate electromotive force in each current-conveying conductor, other than that due to the generator creating such current, and thus alters the normal volume flowing therein through interference with the duties of the said original or legitimate pressure.

The irregularity, tension constancy, and rapidity of action which takes place during such interaction, cause the armature levers of telegraph instruments to become affected in a similarly inconstant manner and degree. The effect produced by the combined influences thus set in operation against adjacent parallel circuits by current interaction is called "induction."

Induction is always greater in dry than in wet weather for several reasons. First, because there being less escape of current down the poles in dry weather, a greater volume of current remains in the conductors, and interaction is necessarily greater; second, because, in addition to the gain in current volume, the "breaks" in single-line circuits during their operation are cleaner. Hence the degree of alterations in current volume between maximum and minimum values is greater when insulation is best. In wet weather the breaks are never clean, as a considerable portion of the volume flowing still remains in the conductor when a circuit is "open;" third, induction is greater in dry weather because operators as a rule work faster, and inductance always increases when the rate per second of the alterations which create it is accelerated.

The degree of induction developed between adjacent conductors depends upon the volume of current flowing, their proximity to each other, rapidity of action, and the distance between the conductors and the earth.

LEAKAGE—CROSSFIRE.

Leakage, of course, means just what the word

suggests; that is to say, a leakage of current from one conductor into another. In wet weather the principal loss due to this cause is the volume of current which escapes to the earth via the wet poles and other points where the wires provide an unavoidable outlet. In addition to this loss a certain amount of current flows across the wet crossarms from one conductor and enters a companion wire carrying a current of lower potential. In this way the two conductors become "crossed" just as effectively as though they made actual contact, although of course in a less harmful manner, because the water path connecting the conductors is so comparatively poor a conductor that but little current actually flows across the crossarm. But the little that does get through creates exactly the same kind of disturbance in the wire it enters as that produced by induction, but in a much stronger degree. Hence the erroneous impression that induction is greatest in wet weather. Disturbances of this kind are generally called "crossfire" effects.

Crossfire may be almost entirely eliminated by connecting the crossarms with the earth by means of a small wire, but as this method greatly increases the total leakage of all circuits the plan has not met with general approval. The distinction, then, between induction proper and crossfire in telegraph circuits may be summed up as follows: Induction is the effect created in adjacent parallel conductors by means of "secondary" currents developed therein by the interaction through space of the variable currents flowing in the wires. Air being classed as an insulator cannot be claimed as a conducting medium, hence the inductive effect manifested is one produced at a distance without material contact of conductors. Crossfire, on the other hand, is a leakage of current from one circuit into another by means of material contact; water being a poor, but nevertheless recognized, conductor of electricity, constitutes the connecting link.

THE INFLUENCE OF WEATHER ON STATIC.

In response to the invitation of Mr. W. H. Jones in his article published under the above title, under the general head of "Some Points on Electricity," in the issue of June 16, the following letters have been received:

Editor Telegraph Age:

The phenomena spoken of in your issue of June 16, by Mr. Willis H. Jones, is a beautiful illustration of the action which takes place around a wire carrying a conductor. It is the same as the so-called "brush discharge" observed in a dark room from a wire connected with a high tension coil. In the case of Mr. Jones' correspondent the neutral wire, being in all probability grounded, is of the same potential as the earth, the other two wires being of higher potential, there is a constant static discharge which causes the electrified particles of dust to adhere to the wall near by.

This theory has been verified by me more than once on the wires of the automatic fire alarm systems. Tracing the wires attached to the thermostats on the walls and ceilings, I have found that in every case the grounded wire is clean while the wire leading from the battery has the dusty deposit around it. In certain

places where there is much dust flying about this phenomena is very clearly shown, one wire being dusty and the other clean.

Walter M. Petty,
City Electrician.

Rutherford, N. J., June 18.

Editor Telegraph Age:

I note in TELEGRAPH AGE of June 16, pages 263 and 264, under "Some Points on Electricity," requests for an explanation of why some wires collected dust and others did not. I am in accord with the concluding paragraph of that article and I believe the following substantiates the theory:

Some time ago in winter my woolen overcoat hung near a hot stove, and, of course, became thoroughly dry, but also quite dusty. A wisprbrush hung near it, also very dry, and was used to brush off this dust. To get this dust off with this brush was an herculean effort, for it seemed impossible to brush the coat clean.

The winter had almost passed when, on brushing this coat one morning, straws broken from the brush in falling therefrom were noticed not to reach the floor, but even at an angle of 45° lodged on the tail of the coat.

The mystery was at once solved and verified. With hands perfectly dry I detached the straws, held them at a short distance from the coat, and let them drop; they flew horizontally toward and adhered to the coat.

It seems that I had electrified the coat, dust and straws, by brushing the garment. I then wet the brush and as evaporation began at once the electricity was dissipated as fast as generated, and the coat brushed with ease.

B. O. Lenoir,
Captain, Signal Corps.

U. S. Signal Corps Cable Boat, Cyrus W. Field.
Baltimore Harbor, June 19.

[Important articles by Mr. Jones, appearing in back numbers, prior to January 1, 1905, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Fast and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. O. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, Inc.; June 1 to July 16, Inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, Inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, Inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Lane Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power From the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16; The Dynamo—Series, Shunt and Compound Wound, Feb. 1-16, March 1; The Storage Battery, March 16-April 1-16-May 1-16; A New Double Loop Repeater—Comparative Efficiencies of a Polar and a Neutral Relay, June 1.]

Recent Telegraph Patents.

Patent No. 823,176, for electric telegraphy, has been obtained by Isidor Kitsee, of Philadelphia, Pa. A code for telegraphic signals designed to have alternating-current pulsations.

Patent No. 823,206, for a telegraph transmitter, has been awarded to Albert C. Crehore, of Tarrytown, N. Y., and George O. Squier, Washington, D. C. The telegraph transmitter is designed to transmit waves having a sine curve rather than the sharply cut waves which are ordinarily transmitted by automatic devices.

The following patent has expired:

Patent No. 405,211, for quadruplex telegraphy, issued to C. D. Haskins, of Brooklyn, N.Y.

Business Notices.

"Edison Primary Batteries" is the title of a sixteen-page pamphlet describing and listing the Edison caustic potash cell. This battery is distinguished from others of the caustic potash type by having the copper dioxide compressed into briquettes, and this method of construction is justified by a quotation from Prof. Carhart, as follows: "Recognizing the good qualities of copper oxide as a depolarizer, Edison has devised a form of design to meet the objections. The copper oxide is employed in the form of a compressed slab which, with its connecting copper support serves also as the negative plate. In recent cells the device has been resorted to of reducing a superficial film of copper on the oxide before it is sent from the factory."

The Weston Electrical Instrument Company Waverly Park, Newark, N.J., have this year taken their Mr. Caxton Brown into the Newark factory as secretary of the company and sales manager, and in his place have put Mr. Stanley Brown as manager of the New York office. In connection with this office there has been installed a repair department, the purpose of which is to take care of the repairs in the metropolitan district, and particularly to look after emergency calls. This new feature has been very warmly welcomed by the many users of Weston instruments in New York city, and has enabled the manufacturer to insure a higher degree of satisfaction to his customer than ever before. The company are very much pleased with the present instrument outlook, and are exceedingly busy preparing new models for measuring apparatus to meet the wider demands of modern electrical requirements.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

While Colonel R. C. Clowry was in England recently, he was conducted about London by Sir W. H. Preece, who is an old friend and who extended to his visitor every courtesy. The Colonel was also entertained at the Whitehall Club by George von Chauvin.

Mr. George H. Schnabele of General Superintendent Cook's office at Chicago, Ill., was married on June 6 to Miss Bertha M. Koch.

Mr. T. W. Goulding, general superintendent at London, England, has been promoted to the position of European general manager. His headquarters will remain at Gresham House, London.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

Among recent visitors to the executive offices were:

Mr. Guy E. Paine, general superintendent, and

S. A. Duncan, assistant general superintendent, Atlanta, Ga., and George W. Ribble, superintendent, Washington, D. C.; S. M. English, general manager of the Postal Telegraph-Cable Company of Texas, Dallas, Tex.

The Cable.

Cables interrupted June 28, 1906:

Venezuela. Jan. 12, 1906

Messages may be mailed from
Curacao or Trinidad.

Pinheiro "via Cayenne" Aug. 13, 1902

Manaos June 23, 1906

There are 233,823 miles of submarine cable laid in the oceans of the world. At this writing the submarine cable system is practically complete. No place ordinarily in touch with the world's cable system is cut off from communication by reason of the interruption of a submarine cable. This is a notable fact and points to the stable value of submarine cable property. Improvement in the quality of the materials used and in the construction of the cables and the increasing knowledge of the ocean floors contribute to this satisfactory condition.

It is stated that cable connection between Jamaica, British West Indies, and its sister colonies, will be one of the important subjects to come up for discussion at the meeting of the Chamber of Commerce in London this month. The representatives of all the British colonies in this hemisphere will use their best endeavors to bring influence to bear on the imperial government to link together all the parts of the empire on this side of the Atlantic by means of an all-British cable. The island of Jamaica already has a direct connection with the mother country, from Jamaica to the Barbados or Trinidad, then and the idea is to carry the present cable lines around the smaller islands, and down to British Guiana. This would give the people of these colonies first-class service, with reduced rates. It is also claimed that an all-British West Indian cable would be of very great strategic value to Great Britain.

The Mexican Telegraph Company reports its balance sheet as of December 31 last, as follows:

Assets.—Plant \$1,855,164, cash \$23,834, construction account \$399,553. Central and South American Telegraph Company stock \$127,386, railroad bonds and other securities \$2,283,810, treasury stock \$87,400, steamship Mexicana \$52,173, spare cable \$51,778, sundry debtors including traffic balances \$288,840, total \$4,169,938.

Liabilities.—Capital stock \$2,000,000, earnings invested in improvements \$31,654, profit from sale of treasury stock \$38,493, sinking fund \$8,940, proposed January dividend \$47,815, sundry creditors including traffic balances \$38,089, surplus \$2,004,948, total \$4,169,938.

The \$1,000,000 of new stock of the Mexican

Telegraph Company which was recently authorized by the stockholders was issued on account of expenditures out of the earnings of the company on plant amounting to \$560,000 and also on account of concessions and contracts valued by the directors at \$440,000. The new stock was distributed on June 1, to the stockholders of record May 8, 1906. It will participate in the dividends to be paid in July.

COMPLETION OF THE COMMERCIAL CABLE TO JAPAN.

Messages between President Roosevelt and the Mikado have been exchanged by the new cable which has just been completed between Guam and Japan. The Commercial Pacific Cable Company now has a complete line of cables from San Francisco to Japan. These messages are as follows:

Washington, D. C., June 25, 1906.

To His Majesty the Emperor of Japan,
Tokio.

I am glad to send to your Majesty over the American cable, which has just been completed between Guam and Japan and thus unites our two countries across the Pacific, a message of sincere good will and the assurance of the earnest wishes of the Government and people of the United States for the welfare and prosperity of your Majesty and your Majesty's Empire.

THEODORE ROOSEVELT.

The Emperor replied as follows:

Tokio, June 26, 1906.

The President,
Washington.

I have just received with great interest and appreciation the kind message sent by you over the cable which has recently been laid between Guam and Japan and which will shortly be open to the public. I am highly gratified to know that the first telegram by this new line which unites our two countries should convey to me the assurances of the friendly sentiments of the Government and people of the United States for myself and my people. I most cordially reciprocate your expressions of good will and good wishes.

MUTSUHITO.

AMERICA AND JAPAN CONNECTED BY CABLE.

The Tokio and Guam offices of the Commercial Pacific Cable Company are in communication by the new cable. Messages between the President of the United States and the Emperor of Japan have been exchanged. The bridging of the Pacific and the encircling of the coast of Eastern Asia by an all-American cable is thus complete.

No American enterprise has appealed so powerfully as this to the statesmen and merchants of Japan, and every stage of its progress has been watched by them with an intensity of interest of which our people have but a faint conception. The original offer to construct a cable from San Francisco to Manila without Government aid or subsidy, was made by Mr. John W. Mackay to the Hon. John Hay, Secretary of State, on August 22, 1901. It was a plain proposition, made by a man of undoubted responsibility and of long experience with submarine cables, to do that which no other private person had ever offered to do, and which the government itself was unwilling to do. It had nevertheless to encounter

opposition in Congress, and it was not until June 11, 1902, that this opposition was finally silenced. Undeterred, however, by possible legislative obstacles, the Commercial Pacific Cable Company ordered the construction of the cable, and on the very day on which the bill was killed which proposed to commit the government of the United States to the work of laying a cable across the Pacific Ocean, it was announced that 1,065 nautical miles of the cable which was to be laid between San Francisco and Honolulu had been manufactured, and that the work of making the cable was proceeding at the rate of twenty-six miles per day.

By the end of June, 1903, the last section of the cable to Manila was landed at Honolulu, and the entire line from San Francisco to the Philippine Islands, a distance of over eight thousand miles, was successfully completed. That is to say, within eighteen months after the signing of the contract, an enterprise was executed which has no parallel in the history of ocean telegraphy. The route followed is unique for its lack of natural stations, and not only traverses the greatest uninhabited waste of water on the globe, but has to deal with ocean depths much greater than any previously encountered. The message which was sent on July 4, 1903, by President Roosevelt around the world, by the completed line of the Commercial Pacific Cable Company and its connecting lines between Europe and Asia, went by the Postal Telegraph Company's land line from Oyster Bay to San Francisco, thence by the Commercial Cable line to Honolulu, Midway, Guam and Manila. From Manila to Hong Kong, the message passed by the cable which Admiral Dewey cut in 1898; from Hong Kong it went to Saigon to Singapore, to Penang, to Madras, to Bombay, to Aden, to Suez, to Alexandria, to Malta, to Gibraltar, to Lisbon to the Azores and thence to Oyster Bay. Between Hong Kong and the Azores, the transit was by foreign cables, and the shortening of transpacific communication, both in respect of interruptions and of actual distance, may be inferred from the devious course which had to be taken by the President's message in its homeward course from Eastern Asia.

After communication with Manila was established, there remained the task of extending the all-American Pacific cable to China. This was completed by April 17 of the present year, and it has been promptly supplemented by the extension of the cable to Japan. Thus, in less than five years since the first communication of Mr. John W. Mackay to the Secretary of State, the greatest single ocean cable enterprise in the world has been brought to a successful termination.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

Wireless Telegraphy.

At the suggestion of the British Government, the International Wireless Telegraph Conference, which was to have taken place in Berlin this year, has been postponed from June 28 to October 10.

On April 18, at 8.05 a. m., when the United States steamer Chicago was about twenty-five miles from San Diego, Cal., word was received from the De Forest wireless station at that place that an "Earthquake had about demolished San Francisco and fires breaking out," followed by another message confirming the report. These facts were given to the officers, and shortly the ship was proceeding to the scene with all possible haste. Constant touch was maintained with the shore by wireless during the entire trip, and bulletins were kept posted of existing conditions in San Francisco. Long before arrival every preparation was made for landing parties. On account of the chaotic condition that existed, the wireless seemed the only system whose wires were not down. The military and municipal authorities, and the general public realizing this, flooded the vessel with messages, many of which were of considerable importance, as they were bulletins keeping the government authorities in Washington, D. C., informed as to the situation. This busy time lasted about two weeks, during which time the Chicago alone sent and received over 1,000 messages, while the other stations at Mare Island navy yard, Yerba Buena training station and the Farrallone Island were also kept very busy.

The principal points of agreement entered into between the Postmaster-General of England and the Marconi Wireless Telegraph Company and the Marconi International Marine Communication Company, are as follows:

1. During a period of fifteen years from the date of these heads of agreement the Postmaster-General will grant, subject to the conditions herein-after specified, facilities for the collection, transmission and delivery in the United Kingdom of messages to and from places in Newfoundland and North America exchanged between the United Kingdom and Newfoundland and North America by means of the Marconi wireless telegraph apparatus, such apparatus to be installed at Poldhu, Cornwall, and such other stations in the United Kingdom as shall be agreed upon between the companies and the Postmaster-General, and such facilities to be substantially the same as are granted to the submarine cable companies in relation to similar messages.

Corresponding facilities for messages exchanged between the United Kingdom and other countries or places will be granted during the same period in relation to such countries or places and in relation to such stations in the United Kingdom as may from time to time be agreed upon between the companies and the Postmaster-General.

Provided that (a) the Postmaster-General will not grant any such facilities as are mentioned in this sub-clause, unless he is satisfied that the companies are in a position to transmit and receive with reasonable certainty and reasonable speed the messages for which the facilities are required, and to secure the delivery of outward messages at their destination.

(b) The Postmaster-General will not, except in the case of Italy, which shall be open to consideration, grant such facilities in respect of messages to or from the Continent of Europe.

2. Subject to the conditions hereinafter specified, and subject and without prejudice to the operation of the agreements of September 26, 1901, between the companies and the committee of Lloyd's, the Postmaster-General will, during a period of eight years from the date of these heads of agreement, grant the like facilities for messages exchanged between ships and the several stations in the United Kingdom specified in the schedule hereto (subject to the conditions appearing in such schedule) and such other stations in the United Kingdom as shall from time to time be agreed upon between the companies and the Postmaster-General. Messages exchanged between ships and stations on shore are herein-after referred to as "ship-and-shore messages."

The agreement further provides that all messages of the British Government shall have priority over all other messages and at half rates. The companies also undertake to work their stations as far as possible so as not to interfere with the working of other stations, and to employ only British operators at the companies' stations in the British dominions. The Government takes the right to prohibit or control the working or, if necessary, to take over the working, of any of the companies' stations in the event of any emergency, subject to the payment of reasonable compensation to the companies under the same conditions as those prescribed in the landing licenses granted to cable companies. The companies undertake to observe in the United Kingdom and on British ships if required the stipulations contained in the protocol of the recent Berlin conference on wireless telegraphy (except Article VI.), or a convention based upon these stipulations. The agreement consists of fifteen clauses, and a schedule which gives a list of the stations to be used for ship and shore communication. These are at Lizard, Rosslare, Crookhaven (or Brow Head), Withernsea, Caister, Niton, Holyhead, North Foreland, and Haven. The last six stations are to be closed if the Admiralty find that working at such stations interferes with Admiralty stations, in which case arrangements will be made for substituted stations or for the transaction of sea telegraphy, and if Lloyd's so desire, maritime signaling by the Admiralty on behalf of the companies at their adjacent stations.

Military Telegraph Under Lincoln.

By Albert B. Chandler.

[Colonel Chandler possesses an extensive fund of reminiscence of the telegraph, the President and of the Cabinet officers of the period during the Civil War, acquired when he served as one of the three cipher operators in the military telegraph service in the War Department at Washington. He is an interesting storyteller, and much of what he has written has already appeared in these columns. In the Sunday Magazine of June 17, Col. Chandler makes a further contribution to the literature of the subject from which we make copious extracts.—Editor.]

For some time after hostilities had begun, the lines and property of the American Telegraph Company in the East, of the Western Union Telegraph Company in the West, and the Southwestern Telegraph Company in a part of that section of the country were availed of by the Government for military purposes without any direct control therefor on the part of the Government. But as the fearful proportions of the Rebellion were disclosed, and the importance of Government control of the quickest means of communication came to be understood, the military telegraph was established as a separate organization, and it was wisely made an arm of the War Department, directly responsible to the Secretary in the field.

It is not my purpose now to recount details of the achievements of this organization, nor to recite even an outline of its history; but it may be interesting to know that it comprised about twelve hundred employees, of whom, as far as I have been able to ascertain, less than one hundred and fifty survive. They were a goodly company of brave and talented spirits. The work they performed and the dangers they encountered, the intelligence and faithfulness they displayed, and the great results which they played an important part in accomplishing, were to my knowledge well understood and keenly appreciated by President Lincoln and Secretary Stanton, who were more familiar with the whole scope of the telegraphers' work than were any other general officers of the Government. Their work was, however, scarcely less appreciated by Generals Grant, Sherman, Thomas, Sheridan, Meade, McClellan, Banks, Butler, and other principal commanders in the field, as shown by their official reports and in their private conversations.

It has sometimes been said of me that I was Lincoln's telegraph operator in the White House. The fact is that no one was his telegraph operator, and no telegraph wires were connected with the White House in his time. I have always considered that I was fortunate in being one of the three cipher operators in military telegraph service in the old War Department building, and to be often with Mr. Lincoln during the time of his greatest burden and anxiety.

My immediate associates were Charles A. Tinker and David Homer Bates. Our duties were equal and co-ordinate in the performance of the important and confidential service that we were called upon to render. Mr. Stanton's secretary used to refer to us as the "Sacred Three." Much of the time I alone occupied the room adjoining the private office of the Secretary of War, Mr. Stanton. This was often spoken of as the President's room, for it was to it that he came nearly every day in his anxiety to learn the latest news of the various armies, and the talks he had there with the telegraph boys and Major Eckert, their superintendent, seemed to afford him genuine diversion. Frequently, too, he had interviews there with the Secretary of War, the Secretary of State and of the Treasury, with the Judge Advocate General in Chief, and the other of the chief officers of the government.

I first saw Mr. Lincoln at Allegheny, Pennsylvania, when he was on his way to Washington to assume the task of reconciling a great nation to itself; for it was even then clear that his administration was to be fraught with difficulties such as had not fallen on any previous President of the United States, although I believe that neither he nor any other citizen of the Republic had then any expectation that so terrible and destructive a war was pending. He was received there with great enthusiasm by the multitude that had gathered to see him, and acknowledged their demonstrations with the homely dignity that was peculiar to him, and without making any speech. As both telegraph operator and railway agent, I was among the few who were privileged to enter the private car in which he and his family were making their journey, and I shall never forget the deep impression which his towering form and his already sad and always kindly face made on me as he took my hand. I had then no expectation of seeing him again during his presidency.

You may like to know, as probably most of you do not, that his composition, in writing, was slow, and apparently somewhat labored, and his writing itself was a comparatively slow process. While writing, as I have often seen him, sitting directly opposite me, and at the same table, he was accustomed to look out of the window between his sentences, scratch his head, usually his right temple, for his sentences in his mind, often moving his lips in actual whisper of the words, and then write them out, rarely erasing, interlining, or correcting; and when he had finished, what simple and perfect diction it was! His style of composition was as peculiar and novel as himself, and always in simple, terse, and clear language. He sometimes read aloud, and in doing so would occasionally purposely mispronounce words and misplace inflection and accent, as if musing as he read.

His keen sense of the ridiculous extended to little things, and he was as perfect a mimic as his large frame would permit. A good example

was this: Albert Johnson, Mr. Stanton's private secretary and personal accountant, was a man of unusually small stature, weighing perhaps a hundred and ten pounds, and his deportment was extremely polite. On one occasion Mr. Lincoln wanted to refer to the Bible, and he asked Johnson to bring it. Johnson danced out of the room to get it; but not finding it quickly, and fearing that the President might become impatient, he ran back to explain that he had not found it yet, but would have it presently. He finally brought it, with an apology for the delay, and, with low repeated bows, retired. After Mr. Lincoln had made the desired use of the book, he ran nimbly into the adjoining room, just as Johnson had done, reappeared, then made his delivery of the book in the same fashion, greatly to his own and our amusement. This may not strike anybody as funny; but the extreme contrast in the size and movements of the two men, and the close imitation of the mimicry, made it decidedly appear so to us, for whose benefit he performed the bit of acting.

The Battle of Drainesville was, I believe, the first engagement of the Army of the Potomac under McClellan, and occurred after weeks of spirited picket firing. It, however, accomplished nothing of practical results, and it seemed that both armies were afraid to make a serious attack. After reading the reports, Mr. Lincoln said it reminded him of two puppy dogs he had seen barking furiously at each other through a paling fence. They kept up the most savage snarling as they ran along until they came to an open gate, when each snapped its jaws at the other, turned quickly around, and ran away. The first news of the battle was to the effect that our forces had whipped the rebels, and among other things had captured fifty Colt's revolvers. Mr. Lincoln read the message aloud, and asked the office messenger who handed it to him if he could tell when those Colt's revolvers would grow to be horse pistols.

On the seventh of the following August, while I was alone in my office, Mr. Lincoln came in, bringing a long message which he had written with his own hand, addressed to Governor Seymour of New York, who, you may remember, was opposed to the war. He sat down at a desk and carefully reviewed it, so that I might see that it was properly transmitted. He explained to me something of the occasion of it, a special messenger having come over from New York with a long argument urging, among other things, that the draft should be suspended until the Supreme Court had decided as to the constitutionality of the draft law; and he told me a funny story about a Boston minister who had been drafted, and the criticism he made upon that method of recruiting the army. This message proved unanswerable, and the draft proceeded as had previously been ordered.

On December 21, 1863, a letter addressed to A. Keith, Halifax, Nova Scotia, who was known

to be a Confederate agent in that city, was intercepted by Postmaster Wakeman of New York city as a suspicious document, and forwarded to the Secretary of War. It was written in cipher made up of five different characters, each representing the letters of the alphabet, and they were so intermingled that the discovery of one of the plans on which the cipher was devised would afford no clue to either of the others. It was referred to several stenographers and experts in correspondence in the War Department building, none of whom made any progress toward its translation. It was finally brought to the three cipher operators in the telegraph office whom I have mentioned. After several hours of close study they made the translation complete. It reported the receipt and forwarding of twelve thousand rifled muskets for the use of the Confederacy, and also disclosed a plan for the seizure of two steamers which were to sail from New York city a few days later. The translation was forwarded to Robert Murray, then United States marshal in New York city. The sailing of the two steamers was postponed, and they were no doubt saved by the discovery of the plot concerning them.

A few days later a second letter to the same address was intercepted, and by means of the key which the first translation had furnished this was quickly translated by the same boys and forwarded to Marshal Murray. This resulted in the arrest of the engraver, the lithographer and printer in New York city and the capture of several millions of rebel bonds and notes of various denominations which they had made, and also the capture of the machinery and dies and paper which were used in their manufacture. By order of the Secretary of War these boys were given twenty-five dollars each as a Christmas present, and their salaries increased by that amount monthly thereafter.

Telegraph Poles of Paper.

Serviceable telegraph poles can, it is said, be constructed of paper. Such poles are made of paper pulp, in which borax, tallow, etc., are mixed in small quantities. The pulp is cast in a mould with a core in the center, and forms a hollow rod of the desired length. The paper poles are said to be lighter and stronger than those of wood, and to be unaffected by the sun, rain, dampness or any of the other causes which shorten the life of a wooden pole.

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General Mention.

Manager Harvey J. Lockrow, of the Western Union Telegraph Company, Newport, R.I., has just taken his third degree in the St. Paul's lodge of Masons.

Mr. J. B. Dillon, chief operator of the Western Union Telegraph Company, Memphis, Tenn., in renewing his subscription, remarks: "Your paper, like fruitcake, gets better with age. As I like the aforesaid fruitcake, so also do I like TELEGRAPH AGE."

"TELEGRAPH AGE is worth its weight in gold. If you desire a first-class telegraphic bracer and expect to reach the top rung in the professional ladder, no one will make a mistake by subscribing for TELEGRAPH AGE," is the testimony of D. L. Graham, Canal-Dover, Ohio.

A bill has been introduced in the House by Congressman W. W. Smith, which provides that every telegraph company shall show plainly on every telegram delivered the time of day at which the telegram was handed in at the company's office at the place from whence it came.

A very peculiar incident occurred in a telegraph office the other day. The manager received a postal card from an operator in another office saying: "Please answer on No. 6; have been calling you three days on a rush message." As a matter of fact, the operator was calling on a wire which was not cut in the office he wished to reach.

Mr. W. G. Peebles, assistant superintendent, Western Union Telegraph Company, Jacksonville, Fla., in a recent communication, has this to say: "I always have one dollar and a half per year for TELEGRAPH AGE and you will please, therefore, consider this letter as standing to keep the paper coming. I consider it the best of its kind, and need it in my business."

The twentieth anniversary of the founding of the Order of Railroad Telegraphers, was celebrated June 9 at Cedar Rapids, Iowa. President H. B. Perham, Past President and Founder of the Organization A. D. Thurston, Past President D. A. Ramsey, Grand Secretary and Treasurer L. W. Quick and other prominent workers of the order were present and delivered addresses at meetings held both in the afternoon and evening.

Chess by cable is a familiar game, but a telegraphic billiard match played by men three hundred miles apart is a novelty. The table was marked in squares, like a checkerboard, small enough to place the balls accurately. At the end of each play the exact position of the three balls would be telegraphed the other, and the balls on the second table placed in precisely the same position as they were left on the first. It required four days to play off the game, as no special wire was used. Had arrangements been made for direct communication, the game could have been concluded in little more than the usual time.

The army signal office will soon purchase a large number of new reels. The corps has adopted a new reel for taking up the buzzer wire used in field telegraphy. This is a device which is worn on the breast of the carrier to whom it is secured by means of straps passing over the back. The reel is geared and the wire can be quickly collected on the spool, which is turned by hand as the bearer walks or runs along. When a spool is filled, of course, it is replaced by an empty one, which is filled in turn. This taking-up reel is supplemented by a holder to be carried in the hand and containing a laden spool from which the buzzer wire is paid out. The new taking-up reel, of which a large number will be purchased for use in the field, will shortly be subjected to practical test, probably by Captain Charles de F. Chandler of the signal corps, with a view to formulating instructions as to its use.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. Frank Hughes, manager for four years of the Houston, Tex., office, resigned on June 15, because of poor health. He was presented by the office force with a handsome three-link chain, symbolic of the Odd Fellows association, of which organization he was a member. Mr. Hughes has been succeeded by Mr. C. W. Gribble, a man of fine record, whose service of twenty-five years or more in the Western Union employ has gained for him an excellent reputation. He was manager for a long time of the office at Texarkana, Ark.

The following change has occurred in the Postal Telegraph-Cable Company's service:

Mr. Charles F. Fordham, manager at Oswego, N. Y., has resigned to become manager of the Ontario-Bell Telephone Company.

Municipal Electricians.

A new police telegraph system, the apparatus being manufactured by the Gamewell Fire Alarm Telegraph Company, is being installed in Atlanta, Ga., under the direction of M. J. Wright, electrician of the police telegraph, that city.

It will be remembered that the dates fixed for the convention of the International Association of Municipal Electricians at New Haven, Conn., are August 15, 16 and 17. The meeting will be an interesting one and will doubtless attract a full attendance of members. Later we shall publish the programme of the proposed proceedings.

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CHANGES OF ADDRESS.—The address of a subscriber will be changed as often as desired. In ordering a change of address the old as well as the new address must be given.
REMITTANCES to Telegraph Age should be made invariably by draft on New York, postal or express money order, and never by cash loosely enclosed in an envelope. By the latter method money is liable to be lost, and if so remitted is at the risk of the sender.

NEW YORK, JULY 1, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientage. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The San Francisco Grand Jury and the Telegraph Companies.

Amid the feeling of sympathy expressed for San Francisco, and in the face of an unbounded generosity with which that unfortunate city has been treated because of the overwhelming disaster which recently overtook it, there comes a harsh and discordant note at once so untruthful, so ungrateful, so offensive and ill-advised both in thought and in expression, as to create a feeling of intense hostility in the minds of all right-thinking people. It is sounded by the grand jury of that town, which charges the telegraph companies with practising fraud and deception in handling messages confided to their care, inasmuch as telegrams were accepted for transmission when prompt delivery of the same was impossible.

The situation is vigorously discussed elsewhere in this issue by Col. Robert C. Clowry, president and general manager of the Western Union Telegraph Company, and Mr. William H. Baker, vice-president and general manager of the Postal Telegraph-Cable Company, also has a communication on the subject.

It should not be forgotten that the calamity that overwhelmed San Francisco likewise brought corresponding ruin to the telegraph, not only in the stricken city itself but also in the country surrounding it. Every interest went down in a common destruction before the awful visitation of April 18. Yet in the jury's presentment this fact evidently received no consideration. It was expected, apparently, that of all the agencies centering in San Francisco and making for the good of the city, the telegraph companies should alone be able to withstand earthquake shock and consuming fire and that its services should remain unimpaired.

The attitude assumed by this extraordinary grand jury and the complaining tone adopted because of the alleged failure of the telegraph interests to contribute to the relief fund, will strike the ordinary observer as being supremely contemptible. In formulating its statement, no account was taken or credit given by the jury for telegrams, telegraph money orders, etc., sent from many thousands of offices, besides European cable despatches, all of which, if in any way identified with the relief work of San Francisco, were transmitted absolutely without charge. Here, then, was a gift, the value and magnitude of which few can estimate, tendered promptly and freely under circumstances that went far to ameliorate conditions in the devastated town. If, as it was charged, messages were accepted by the telegraph companies under conditions precluding their prompt delivery, it was because the business was forced upon them despite the protest that delays in delivery were inevitable, as every sane person knew must be the case. As common carriers absolute refusal to receive messages could not be maintained when acceptance was insisted upon.

As a matter of fact the telegraph companies rendered remarkably good service under existing conditions, and set an example of public spirit and unselfishness at a time that "tried men's souls," that should have won manly and generous acknowledgment rather than censure.

In the face of unparalleled difficulties, yet acting with a promptness and a tireless energy that knew no respite, the telegraph people quickly marshaled vast reserve forces of men and material, hurriedly summoned, and were soon in a position to restore outside communication, which had been absolutely destroyed—a Godsend, indeed, to the stricken town at that time.

After all that the telegraph companies did for San Francisco in its hour of sudden desolation, it comes with bad grace, to say the least, marked with a spirit of what looks like peevish fault-finding, for a grand jury to take upon itself the

responsibility of offering an insult instead of the right hand of fellowship. Col. Clowry's indignant words denouncing the act as one of wickedness, clearly fit the case.

Not alone are the charges made against the telegraph companies wicked, but they are also so palpably unreasonable that their rejection by the country at large is already being made manifest and the action of San Francisco's grand jury severely rebuked.

John Gavey on Submarine Telegraphy.

At a banquet recently given in London by the Eastern and Associated Telegraph companies, at which the prominent telegraph and cable men of England were present, Mr. John Gavey, the engineer-in-chief of the telegraphs of Great Britain, in proposing the toast of submarine telegraphy, had this to say:

"In this country we have every reason to be proud of the origin and progress of submarine telegraphy, which was initiated in England, the first submarine cable having been laid from our shores. Since that time every effort had been made to extend the range of submarine telegraphic communication to all parts of the world, and at the present time Great Britain occupies the position of having made and laid with its own capital the vast proportion of all the submarine cables of the world. Among the assets of the submarine cable companies was a fleet of repairing vessels, which would form a respectable fleet for a moderate sized state, but with a difference. The fleet, if owned by a state, would be intended for war and for the destruction of life, while the vessels of the great telegraph companies were concerned in securing telegraph communication throughout the world and the promotion of the happiness and comfort of mankind. I might mention a subject which was doubtless of interest to them—namely, the prospects of submarine telegraphy when confronted with wireless telegraphy. For me to express a very definite opinion would be in the nature of a prophecy. What was said when gas was first introduced as to the extinction of the tallow candle industry, and when the electric light came along as to the extinction of the gas industry, might be said in regard to the prospects of submarine telegraphy when confronted with wireless telegraphy. But the use of candles became greater than ever, the gas companies' shares were still excellent investments, which proved that there was in each case room for both. This could be said in the case of submarine telegraphy and wireless telegraphy. The new system should serve to supplement and assist the old."

The Old Telegraph Trail in British Columbia.

The story of the project by the Western Union Telegraph Company during the sixties, when it was thought that the successful laying of the Atlantic cable would never be realized, to build an overland telegraph line connecting this coun-

try with Asia and Europe, crossing the intervening water by the way of Behring Strait, has been told in these columns. The old "telegraph trail" in British Columbia, along which this line was to proceed, traces of which still exist, and which at various points may be observed quite distinctly, followed up the course of the Fraser river as far as Quesnel.

On the line from Quesnel northward, says the Vancouver Province, things were left as they stood; the line, as far as constructed, was never used, and gradually fell; and to-day only occasional poles remain standing, while miles of wire have been trodden into the ground by pack animals, and can be seen sticking out of the mud at intervals, still perfectly sound and not at all rusted. The greater part of the wire has, however, been taken by the Indians for various uses. With it their houses are tied together; they made it into nails, fish spears, traps, etc., and even constructed most ingenious suspension bridges with it.

It is interesting to note that the present Dominion Government telegraph line to the Yukon follows the old line as far as the latter went, utilizing the old right-of-way cutting, but having, of course, to replace the poles and wire. The old telegraph trail has ever since been the main thoroughfare through this northern interior, and from it other trails branch off to various districts.

There can be little doubt but that the explorations caused by this telegraph enterprise had an influence on the territory investigated, indirect perhaps, but none the less effective and lasting. For it is a noteworthy fact that the negotiations for the purchase of Alaska from Russia by the United States were begun in 1866, just about the time when the reports of these surveys would reach the United States, and that these negotiations emanated from Washington.

The Telharmonium.

Several months ago reference was made in these columns to the ingenious instrument of Dr. Thaddeus Cahill, of Holyoke, Mass., by which, it was claimed, music may be transmitted over telegraph and telephone wires for distances practically without limit. The apparatus, it appears, has been brought to New York, where it will be set up with the object of making regular demonstrations of the system. A hall has been secured at a central point in the theatre district on upper Broadway, and in the early fall telharmonic concerts will be given for the general public. The plant is being so arranged that the auditors can also be spectators and see the music-making machinery in operation, and the distribution of the music by wire to distant points in the city will also be illustrated.

TELEGRAPH AGE is the only telegraphic newspaper published in America. It is up to date, covering its field thoroughly, and no telegraph official or operator, can afford to be without it.

The Telegraph Companies Refute the Action of the San Francisco Grand Jury.

The grand jury in San Francisco having adopted a report on June 14 to the effect that the Western Union Telegraph Company had accepted messages without sending them by wire, at the time of the great disaster, but that instead had mailed the same to their destination, etc., drew from Col. Robert C. Clowry, president and general manager of the Western Union Telegraph Company, an indignant protest.

"The report is not only unfair, but absurd," said Colonel Clowry. "Why, we did all we possibly could, and instead of making money lost a large amount, although we will never be able to tell how much. We are charged with making a million dollars by sending messages at the time of the disaster. It should be that we lost that much. We took every message that was sent with the distinct understanding that it was subject to indefinite delay."

Colonel Clowry told of the extreme difficulty of finding people to whom messages had been sent. He said that there was no postoffice, as there was at Baltimore, the banks were closed and there was no place to post lists of those for whom messages were waiting. Finally, he said lists were posted as high as the room at Oakland and the ferryhouse at San Francisco, and that was the only means of letting people know.

"What about the charges that the companies mailed messages?" was asked.

Colonel Clowry replied to this question by saying:

"Of course we mailed messages. We always do in a crisis of this sort. That's nothing new. Whenever there is trouble and we can't get our messages through we telegraph to the nearest point we can reach and then either mail or send special messengers with the messages. There is never a time on this continent that our lines are not down somewhere. Suppose a storm destroys our lines in Iowa. There will be a big accumulation of messages in Chicago, with no possibility of forwarding them under thirty-six hours. Then we would send a special messenger by train to the nearest station beyond the break and telegraph from there."

Colonel Clowry explained just what the companies did at San Francisco. He said that they forwarded all messages by wire to the nearest points likely to reach any one. He said they did not use the ordinary mails, but special messengers. In some cases copies of the messages were sent to the postoffices where the companies thought it would be the best chance of finding people. Much the same thing was done at Galveston, Baltimore and other disasters, he said.

"Our operators out there," he continued, "worked night and day until they collapsed. When they got messages they sent them, frequently by mail, to the place they thought was most likely to reach the receiver. Wasn't that

a natural thing to do? Remember, all of these messages were forced on us, and we couldn't help taking them."

"Could you as common carriers refuse to send any messages?" was asked.

"No," was the reply, "we must accept them when people insist, as we are common carriers. But we accepted every message for weeks subject to indefinite delay. That was as plain to the senders as A, B, C. We are bound to forward all such messages just as fast as we can."

Colonel Clowry talked at length regarding the services rendered by the companies.

"They accuse us of not giving any contribution to 'Frisco," he began. "Why, we gave everything we had—every message of relief was sent free. You know, we served the newspapers of this country for two weeks with all the news we could get free of cost. There were 23,000 points where news bulletins were sent throughout the country free of cost. We forwarded all messages dealing with the relief free absolutely, and all relief societies and private individuals sent messages free. We telegraphed orders for money but handled no actual money, that would have been too great a risk. They complain about this lack of contribution. I wonder how much all this was worth to the people of the stricken city?"

"I cannot help thinking," continued Colonel Clowry, "that this charge by the twelve men of the grand jury is an outrage. It is worse—it is wicked. I want to state that our company did more to assist the people of San Francisco at the time of the disaster than any other company or organization in the United States."

Referring to the action of the San Francisco grand jury, the following statement was made by Mr. William H. Baker, vice-president and general manager of the Postal Telegraph-Cable Company:

"All I can say is that we maintained our service in the main office in San Francisco until we were driven out by the fire when we began to receive messages at Oakland. Martial law was established over San Francisco on the day of the fire, and no one was permitted to pass within the lines, so that it was impossible for a number of days to make any attempt to effect delivery of telegrams in San Francisco, even if it would have been possible to have located the persons to whom the telegrams were addressed. Everyone knows that to attempt to locate any one in San Francisco on the day of the earthquake and for many days thereafter was like unto looking for a needle in a haystack. However, we made every practical attempt to make deliveries and sent many messages across the bay from Oakland when there was a possibility of finding in San Francisco the persons to whom the messages were addressed. Most of these persons called at our Oakland office for their telegrams because they also had been driven out by the fire.

"On account of the great and unusual volume of business, particularly in messages inquiring for friends and relatives, the telegraph facilities to Oakland were totally inadequate to promptly carry the business offered, and consequently there was delay in the transmission of messages, which was absolutely unavoidable for the reasons stated. In all instances, however, messages were accepted at all of our offices for transmission to San Francisco and other California points, subject to indefinite delay and at the risk of the senders. In other words, the person handing in a message for San Francisco or other California points was always told that we did not know when we could get it through. This was the best we could do.

"I would mention also that most of the messages referred to were personal ones in regard to the safety of friends and relatives, and the persons sending them would have had a grievance against us if we had refused to do the best we could to get them through. We accordingly did the best we could, although the expense to us was very large, probably larger than the revenue we received."

Dead Letter Business.

For a number of years the postoffice department has endeavored to impress upon the public the importance of exercising care in writing addresses on letters, etc., sent through the mails. While this campaign of education has been effective in a measure, the fact that more than eleven million pieces of undelivered matter were handled in the division of dead letters during the year 1905 indicates that there is still considerable carelessness in this respect.

Fourth Assistant Postmaster General P. V. DeGraw, the well-known old-time telegrapher, who because of his telegraph and newspaper training, appreciating that much remains to be accomplished in reducing the number of "dead" letters to a minimum, recently obtained authority from Postmaster General Cortelyou to adopt a plan of procedure which it is believed will materially aid in solving the problem and thereby benefit the general public and relieve the department. The plan contemplates enclosing with each letter forwarded to addressee or returned to writer from the division of dead letters, a card containing a model form of address for mail matter as well as brief instructions in connection with the writing of addresses. If the following instructions are observed letters will not go astray:

"Use ink in addressing letters or other mail matter.

"Write plainly the name of the person addressed, street and number, postoffice and state.

"Place your name and address in the upper left-hand corner of the envelope."

More than eleven million pieces of mail matter were sent to the division of dead letters last year, a large proportion of which could not be

delivered because of carelessness in writing addresses.

The division of dead letters has passed the period of expectancy, and the work accomplished during the month of April indicates that within a brief period the additional facilities given to the division by Postmaster General Cortelyou will cause it to rank as one of the most prominent in the postoffice department.

Upwards of half a million letters were on hand unopened at the beginning of the calendar year, and there has been a daily receipt of upwards of twenty thousand letters since that time. The fact that the work is now up-to-date proves the character of service which is being rendered.

The April report of Superintendent Young to the fourth assistant postmaster general shows that 667,100 letters were received and opened during April, 8,960 of which contained money to the amount of \$5,592.24.

During April, 1905, 637,400 letters were received; 641,600 opened, and 7,600 carried over unopened.

During the month of April 114,857 dead letters were returned to writers, as against 106,398 for the month of March.

Twenty-two per cent. of letters received by this division were returned during the month of April, as against sixteen per cent. for the month of March. It is estimated that not more than thirty-five per cent. of the class of letters received can be returned. These figures, however, vary somewhat, as on April 30 thirty-one per cent. of the letters received were returned.

English Underground Telegraphs.

The underground telegraph cable system between London and Glasgow appears to be nearly complete. The actual length of line is only 409.5 miles, but the total mileage of wire exceeds that of any similar line. Over 37,700 miles of wire have been laid. The route followed by the cable is from London to Birmingham, then through Stafford, Warrington, Preston, Kendal, Carlisle, Beattock and Glasgow. The conduit consists of cast-iron pipes, each nine feet long, not including the socket, and having a nominal internal diameter of three inches. The average diameter is three and one-eighth inches. The line is divided into sections about 150 yards long between Birmingham and Carlisle, and 220 yards between Carlisle and Glasgow. The pipe is laid on an average not more than fourteen inches below the surface of a footway and not more than two feet below the surface of a roadway. At intervals of five miles the cable conductors are led into connection boxes fitted in pillar test boxes. These boxes provide facilities for making all ordinary electrical tests, also for air-driving the cable in case the insulation becomes defective. The cable line from London to Birmingham is 117 miles long and contains seventy-six conductors, each weighing 150 pounds per mile.

You can't afford to be without TELEGRAPH AGE

The Twenty-fifth Annual Convention of the Association of Railway Telegraph Superintendents.

The twenty-fifth, or "silver," anniversary convention of the Association of Railway Telegraph Superintendents, met at "The Adams," Denver, Col., on Wednesday, June 20. The gathering was called to order by the president of the association, Mr. E. E. Torrey, superintendent of telegraph of the Mobile and Ohio Railroad Company, Jackson, Tenn. He extended a cordial greeting to the members present; congratulated them on the large attendance, and prophesied a most prosperous meeting. He introduced Mr. H. A. Lindsley, city attorney of Denver, who, in the absence of the mayor, warmly welcomed the members to the city.

Mr. P. W. Drew, secretary of the association, responded to the address of welcome in behalf of the members.

Then followed the election of new active members. These were:

J. L. Davis, superintendent of telegraph of the Chicago and Eastern Illinois Railroad, Chicago; C. L. Lathrop, superintendent of telegraph of the Pittsburg, Shawmut and Northern Railroad, Angelica, N.Y.; F. H. Van Etten, superintendent of telegraph of the Southern Indiana Railway, Chicago; G. W. Dailey, superintendent of telegraph of the Chicago and Northwestern Railway, Chicago; G. A. Cellar, superintendent of telegraph of the Pennsylvania lines west of Pittsburg, Pittsburg, Pa.; J. G. Jennings, superintendent of telegraph of the Chicago, Rock Island and Pacific Railway, Chicago; I. T. Dyer, superintendent of telegraph of the San Pedro, Los Angeles and Salt Lake Railroad, Los Angeles; A. S. Foote, general foreman of the Southern Pacific Company, Houston, Tex.

The associate members elected were:

H. P. Clausen, of the Telephone Review Publishing Company, Chicago; Alexander Henderson, American Circular Loom Company, Chelsea, Mass.; N. R. Fill, American Telephone and Telegraph Company, New York; W. B. Glardon, National Telegraph Company, Rochester, N.Y., and Edwin R. Gill, United States Electric Company, New York.

Telegrams and letters of regret were read from George M. Dugan, of Tip Top, Ky.; C. F. Annett, of New Haven, Conn.; George L. Lang, of Chattanooga, Tenn.; Belvidere Brooks, L. S. Wells, A. B. Taylor and F. G. Sherman, of New York; C. M. Lewis, of Reading, Pa., and I. N. Miller, of Cincinnati, Ohio. The names of George M. Dugan and Charles F. Annett were transferred from the active to the honorary list of members because of their retirement from the railroad service.

The Western Union Telegraph Company, through its assistant superintendent, S. E. Leonard, and the Postal Telegraph-Cable Company, through its superintendent, W. C. Black, extended the usual free franking privileges to members

of the association in using their respective lines. The Colorado Telephone Company also extended the courtesies of its local and long-distance service.

The printed minutes of the previous convention having been distributed, their reading was dispensed with, after which the report of the treasurer, Mr. P. W. Drew, was read. It showed the association to be in an excellent condition, both numerically and financially, the cash balance in bank amounting to \$70.

President Torrey appointed Charles Selden, of Baltimore, and E. P. Griffith, of New York, a committee to frame suitable resolutions on the death of William S. Logue, one of the oldest associate members of the association.

V. T. Kissinger of the Chicago, Burlington and Quincy Railway Company, Lincoln, Neb., chairman of the Committee on Topics, stated that the committee had received from members a number of contributed papers of value to the railway telegraph service.

Charles Selden, of the Baltimore and Ohio Railroad Company, Baltimore, Md., opened the actual business of the convention by reading his paper on train order rules.

U. J. Fry, of the Chicago, Milwaukee and St. Paul Railway, Milwaukee, Wis., who was unable to be present, sent a letter treating on the subject of composite circuits. The communication contained much information of a valuable character, over which there was considerable discussion of a timely and interesting nature. Mr. Fry stated that the new instruments for this class of service furnished by the American Telephone and Telegraph Company were rendering excellent results.

R. L. Logan, of the Kansas City Southern Railway, Kansas City, Mo., another member of the committee on composite circuits, of which U. J. Fry is the chairman, spoke at some length, elaborating on the value of portable telephone apparatus at "blind sidings." The Howler type of apparatus appeared to give the very best results, he said, the instruments never seemingly getting out of adjustment so far as his experience had gone.

Mr. F. H. Van Etten, of the Southern Indiana Railway, Chicago, spoke of his experience with the Howler apparatus on his composite circuits, and stated that they were found very efficient for the service required of them.

W. J. Camp of the Canadian Pacific Railway, Montreal, remarked that he was experimenting at the present time on his lines with the old style of American Telephone and Telegraph composite instruments and with telegraphophone apparatus manufactured at Rochester, N. Y., by the National Telegraph Company, and he would be glad later on to give the association the benefit of the results of his investigation.

F. F. Fowle, of the American Telephone and Telegraph Company, Chicago, spoke on the advantages of the new Howler type of instrument,

which he said was quite efficient, judging them from a commercial standpoint.

W. F. Williams, of the Seaboard Air Line, Portsmouth, Va., informed the convention that he had several sets of this form of apparatus in use on his lines, and all were giving excellent satisfaction. Several sets were used as often as from thirty to forty times a day, and the few dry cells required to operate this composite service were renewed about every three months.

P. W. Drew, of the Wisconsin Central Railway, Milwaukee, Wis., declared that no doubt the consumption of battery on this class of service was occasioned by users leaving the receiver off of the hook, a statement which was verified by telephone engineers who were in attendance.

B. A. Kaiser, of the American Telephone and Telegraph Company, New York, called attention to the fact that his company had an experimental composite circuit in the hall of the convention extending over a hundred miles along one of the railroads for the purpose of demonstrating the efficiency of their latest type of composite apparatus.

E. P. Griffith, of the Erie Railway, New York, said that the many composite circuits on his road had worked successfully for over two years, and that his longest circuit thus equipped was eighty-two miles in length.

The discussion was brought to a close by Secretary Drew reading a letter from H. S. Balliet, secretary of the Railway Signal Association, New York, thanking him for the privilege of using in the printed proceedings of the Signal Association, the papers on this subject, written by F. F. Fowle and read at the Chattanooga convention last year. This, Mr. Drew said, was given merely as evidence to show the importance of and interest attaching to this subject.

In the afternoon W. W. Ryder, superintendent of telegraph of the Burlington system, read a paper on "Increasing Railway Telegraph Facilities." He dealt with the question of economy of arranging the telegraph systems for a big railway and illustrated his points by means of a large map which he had prepared especially for the occasion.

Frank F. Fowle, of the American Telephone and Telegraph Company, Chicago, discussed the question of "The Traffic of Railway Communications," showing the method of arriving at the facilities required for telegraph and telephone communication by the big railway systems.

H. C. Hope, of the Chicago, St. Paul, Minneapolis and Omaha Railway, St. Paul, Minn., in discussing Mr. Fowle's paper stated that he considered heavy copper wires the most desirable and economical on account of strength to withstand the weight of ice during sleet storms.

G. A. Cellar of the Pennsylvania lines west of Pittsburg, Pittsburg, Pa., criticised Mr. Fowle's deductions and gave his experience in dealing with this class of work.

W. B. Glardon, of the National Telegraph Company, Rochester, N. Y., stated that composite circuits had been expected by many to render as good service as metallic circuits, which was impossible. He went on to relate how many telegraphones there were in use on various railroads and concluded by saying that his company was prepared to furnish an efficient composite system at any time. This latter statement was made in reply to a declaration by H. C. Hope to the effect that he had afforded ample facilities at all times to demonstrate the utility of composite and similar systems, but up to the present time the results were not entirely satisfactory.

P. W. Drew, in reply to Mr. Fowle's statement relative to the railroad mail statistics, said that the railway mail service was of too great a volume to count.

H. O. Rugh, of Sandwich, Ill., remarked that he had equipped many of the roads with his system, which included the installation of apparatus on trains.

B. F. Frobes of the Oregon Short Line, Salt Lake City, Utah, said that the Rugh system was in use on his road and was giving satisfactory results, the instruments are of simple construction and do not get out of order.

H. C. Hope stated that his experiments with this class of apparatus convinced him that they would not work on circuits containing underground or cables.

At the conclusion of this discussion the convention adjourned for the day.

The second day's session was called to order at 9 A. M. on Thursday, June 21, President Torrey in the chair. The convention went into executive session, which lasted until 10.30 A. M., when the doors were thrown open to the public.

After a telegram of regret had been read from Mr. C. S. Rhoads of the "Big Four," Indianapolis, Ind., John L. Davis of the Chicago and Eastern Indiana, Chicago, addressed the convention at some length on the desirability of formulating uniform rules and regulations governing the telegraph department of railroads so far as it was possible, in order to secure uniformity in this direction. He suggested that a committee be appointed to carry out the ideas of the members in this particular, and when the work had been completed to lay the results before the American Railway Association for its approval, and to put the same into effect on every road represented in that body. W. W. Ryder, of the Chicago, Burlington and Quincy, Chicago, and G. C. Kinsman, of the Wabash, Decatur, Ills., pointed out that a similar committee had been appointed years ago by the association, and the conclusions of its work had been referred to the American Railway Association where it still slumbers. After further discussion on the subject of defining the duties and jurisdiction of a railway telegraph superintendent the convention expressed its approval of making another attempt to bring about the legislation desired, and a committee to carry forward the work will be appointed later.

The committee on pole line construction, through its chairman, E. P. Griffith, of New York, reported progress. Some discussion of the subject followed and was participated in by P. W. Drew, of Milwaukee, G. C. Kinsman, of Decatur, Ill., and W. J. Camp, of Montreal, all of whom declared that the present standard of line construction was better and more satisfactory than at any previous time. Formerly twenty-eight to thirty-five poles to the mile were considered sufficient. Modern construction called for from forty to fifty poles to the mile, with the result that a more efficient and permanent service is secured.

E. Parsons of the Illinois Central, Chicago, read a paper on overhead crossings. It transpired in the lengthy discussion that followed that it was the small companies that insisted upon crossing railroads with their wires without due regard to the use of safety devices. The laws of Michigan, Kansas and Ohio regulating the crossing of railroads were ample to protect them, but in many states the legislatures are entirely indifferent regarding the subject.

W. P. McFarlane, of Omaha; W. J. Camp, of Montreal; P. W. Drew, of Milwaukee, and E. A. Chenery, of St. Louis, took part in the discussion which brought to the attention of the convention some valuable legislative work that had been accomplished in the United States and Canada, governing the crossing of railroads by foreign telephone, electric light and power circuits.

The convention then voted on the place and time of holding the next meeting with the result that Atlantic City, N. J., was selected as the place and June 19, 1907, as the date.

In the election of officers that followed, E. A. Chenery, of the Missouri Pacific Railway System, St. Louis, Mo., was elected president of the association, being advanced from the position of vice-president; E. P. Griffith, of the Erie Railroad, New York, was chosen vice-president, and P. W. Drew, of the Wisconsin Central Railway, Milwaukee, Wis., was re-elected secretary and treasurer for the twenty-fourth consecutive term.

On Mr. Chenery's assuming the position as presiding officer, relieving E. E. Torrey, the first act of the convention was to unanimously elect "Old Farmer" Lawton, night manager of the Western Union Telegraph Company of Denver, Colo., an honorary member of the association.

Secretary Drew called the attention of the members to the unusually good exhibits made by the associate members, and he hoped that the displays made by these supply people would result profitably to all interests concerned.

After the usual resolutions of thanks for courtesies extended to the members of the association, on motion of W. W. Ryder, of Chicago, the convention adjourned sine die.

Among those present were:

Baltimore, Md.—Charles Selden.

Chicago, Ill.—John L. Davis, wife and son; F. F. Fowle and wife; A. G. Francis, wife and two sons;

W. E. Harkness, wife and daughter; W. J. Holton, wife and daughter; J. G. Jennings, J. C. Kelsey, E. Parsons, wife and daughter; W. W. Ryder, wife and two sons; F. S. Spaford and wife; F. H. Van Etten, and E. W. Vogel and wife.

Cleveland, O.—W. O. Coffe and Jay G. Mitchell.

Decatur, Ill.—G. C. Kinsman, wife and daughter.

Denver, Colo.—S. R. Beatty, W. C. Black, F. W. Brunton, Alfred Connor, J. S. Evans and wife; A. A. Gargan, W. B. Glardon and wife, S. E. Leonard, H. A. Lindsley, W. G. Matthews and wife; E. E. McClintock, J. Munday, "Old Farmer" Lawton, C. A. Parker and wife; Claude A. Poff, David Reed, wife and daughter; Howard T. Vaile and John M. Walker.

Houston, Tex.—Percy Hewett and A. S. Foote.

Jackson, Tenn.—E. E. Torrey.

Jersey City, N. J.—E. P. Griffith, wife and son.

Kansas City, Mo.—R. L. Logan, wife and daughter, and Val B. Minturn.

Lincoln, Neb.—V. T. Kissinger, wife and mother.

Los Angeles, Cal.—I. T. Dyer and F. A. Morley.

Memphis, Tenn.—B. Weeks.

Milwaukee, Wis.—P. W. Drew, W. S. Burnett and G. L. Pavy.

Minneapolis, Minn.—R. B. Martin.

Montreal, Que.—W. J. Camp.

New York.—G. W. Conkling, B. A. Kaiser and wife; John B. Taltavall and wife, and R. E. Butrick.

Omaha, Neb.—W. P. McFarlane, C. B. Horton, wife and son, and J. R. McDonald and wife.

Pittsburg, Pa.—George A. Cellar.

Portland, Ore.—E. A. Klippel and wife.

Portsmouth, Va.—W. E. Williams, wife and daughter.

Richmond, Va.—J. S. Stevens.

Roanoke, Va.—W. C. Walstrum.

Salt Lake City, Utah.—B. F. Frobes and wife.

Sandwich, Ill.—H. O. Rugh and wife.

Sedalia, Mo.—S. K. Bullard.

St. Louis, Mo.—E. A. Chenery, wife and daughter; H. C. Sprague and wife; Norris R. Fill, F. E. Bentley and Charles W. Hammond.

St. Paul, Minn.—H. C. Hope and daughter, and O. C. Greene.

Wilmington, N. C.—W. P. Cline, wife and daughter.

The entertainment of the delegates was in the hands of a committee consisting of C. A. Parker, of the Moffatt railroad; J. Munday of the Colorado and Southern Railway; E. E. McClintock of the Colorado Fuel and Iron Company, and J. M. Walker of the Denver and Rio Grande Railroad. These gentlemen, besides being aided by their wives, were further assisted by J. W. Brunton and wife; "Old Farmer" Lawton and his son, Denver Lawton; H. T. Vaile, D. Reed, wife and daughter; F. M. Duncan, S. E. Leonard, W. C. Black and C. H. Pond, all of Denver; and C. B. Horton and wife, of Omaha. Besides these many members of the Denver city press took part in entertaining the visitors, and devoted considerable newspaper space in chronicling the events of the convention.

The Board of Trade and the Traction Company of Denver furnished the "Seeing Denver" trolley cars on Wednesday and Thursday, June 20 and 21. On Thursday the ladies enjoyed a trip over the famous Georgetown Loop. On Friday a visit was made to Cripple Creek, the greatest mining camp in the world, members going as the guests of the Colorado and Southern Railway and the Cripple Creek Short Line Railroad. The picturesque mountain scenery along this route is unsurpassed for its beauty.

On Saturday, June 23, the entire delegation with friends, altogether numbering 160 persons, accepted the invitation of the Moffatt road for a trip to the Continental Divide, the same being under the direction of Superintendent C. A. Parker and wife. The trip occupied the entire day, and was one of rare enjoyment. The party reached the summit station of Corona, situated at an altitude of 11,700 feet above tidewater, at 1 P.M. Luncheon was served on arrival by the Colorado Telephone Company. Notwithstanding the fact that the weather was warm in Denver when the train pulled out of that city, it soon began the ascension of mountains covered with perpetual snow, and the temperature fell steadily under the influence of the upward climb. The snow encountered varied in depth of from three to thirty feet. A heavy snow storm prevailed, almost reaching blizzard proportions, a novel experience, indeed, for the majority of the excursionists. Many photographs of this wildly picturesque scene were taken, with the immense snow-banks forming a background. Most of the delegates took occasion to send telegrams from the little telegraph office located at this high elevation to their friends, advising them of the weather conditions prevailing in June. It was fortunate that present among the delegates was Mr. George W. Conkling, of New York, who has the reputation of being one of the finest telegraphers in the country. He rendered valuable assistance in clearing up the business which had piled in so unexpectedly upon the regular operator, Henry W. Plum, formerly of Chicago, an old-time telegrapher and a member of the United States Military Telegraph Corps during the Civil War. Every member of the party seemed to be exhilarated by their stay in the mountains, and as a result the return trip was made memorable by the impromptu entertainment provided by the president of the association, Mr. E. A. Chenery of St. Louis. He saw to it that no one escaped contributing his share to the enjoyment of the occasion; stories, songs and recitations or speeches were freely offered and were most amusing. On the return of the excursionists to Denver resolutions of thanks were unanimously adopted to the effect that the trip up the Moffatt road was one that would always be remembered by those who were fortunate enough to share in its enjoyments.

On Sunday, June 24, the delegates who remained over for the purpose, visited Colorado

Springs, Manitou, Garden of the Gods, and then ascended to the top of Pike's Peak, more than 14,000 feet high. On their return to Denver in the evening, the delegates departed for their homes.

EXHIBITS AND EXHIBITORS.

An exhibit of composite and private line telephones was made by the Western Electric Company of Chicago and New York, Mr. W. E. Harkness, of the Chicago house, being in charge. Samples of the latest railway composite telephones and of the wall, desk and portable Howler types were shown in actual operation upon a quadruplex circuit of the Chicago, Burlington and Quincy Railway Company, between Denver and McCook, a distance of 255 miles, excellent service both as to transmission and signaling being secured.

The Gill Telegraph Selector, manufactured by the United States Electric Company, 95 William street, New York, was also included in the display. The company was represented by Mr. Edwin R. Gill, who is the inventor of the device and who is said to be the originator of selective telegraphic signaling. It was said by the inventor that the device has been adopted by the Western Union Telegraph Company for use in its service, as well as by a number of the large railway systems.

The American Telephone and Telegraph Company was represented at the convention by R. E. Butrick and B. A. Kaiser, of New York; F. F. Fowle and A. G. Francis, of Chicago; N. R. Fill, of St. Louis; George L. Pavy, of Milwaukee; F. A. Morley, of Los Angeles; V. B. Minturn, of Kansas City, and John R. McDonald, of Omaha.

W. S. Burnett, of the Morse Code Signal Company, of Milwaukee, had an excellent exhibit of his system shown in actual operation. The devices included a complete railroad set consisting of a combined telegraph sounder, selective feature and a continuous ringing drop, all in one instrument controlling a set of signaling buzzers for operators in the various stations along railroad circuits. This system is now in actual operation on the Seaboard Air Line and the Buffalo and Susquehanna Railroad, and apparatus are being manufactured for other railroads throughout the country.

George W. Conkling, general manager of the Delany Telegraphic Transmitter Company, of New York, was among the exhibitors. The devices shown by him consisted of entirely new and novel ideas in electric and mechanical automatic dot-making telegraph keys. These instruments are intended to improve the quality of the Morse signals, which of necessity improves the telegraph service generally and makes transmission vastly easier for the individual telegrapher.

Mr. W. O. Coffe of the Mecograph Company, Cleveland, O., had this useful transmitter, of which he is the inventor, on exhibition, and explained its merits to the members of the association. Several thousand mecographs are now, it is said, in use in railroad and commercial telegraph offices in the United States, Canada and Mexico.

The National Telephone Company, of Rochester, N.Y., had on view their latest type of composite instruments and their portable Howler for use in connection with composite telephone sets. Samples of their standard condenser and loud transmitter were also shown. The exhibit was in charge of Mr. W. B. Glardon, assistant general manager and engineer of the company.

The North Electric Company, of Cleveland, O., made a display of their line of magneto telephone equipment, switchboard equipment and linemen's portable compact test sets. Samples of complete magneto switchboards for small exchanges were also shown. The exhibit was in charge of Mr. J. G. Mitchell.

The Sandwich Electric Company, Sandwich, Ill., placed on view sets of what is known as the Sandwich Telegraphone. This is a device that provides for a talking circuit on an ordinary telegraph line without interfering with the Morse signals. The telegraphone is also applicable to quadruplex circuit without interference, and many of the telegraph superintendents present at the convention testified to the efficiency of the system.

Probably the most important use of the telegraphone for railway service is the equipping of trains with the apparatus, thus enabling those in charge to hold communication with distant offices from any point along the road. Mr. H. O. Rugh, general manager of the company, was in charge of this interesting exhibit.

An artistic little brochure, illustrative of the city of Denver, was distributed at the convention by J. H. Bunnell and Company, of New York, the well-known manufacturers of telegraph instruments and other electrical goods. No one could carry away a better pictured reminiscence of the activities and beauty of the city, as portrayed in views of its busy streets, residential neighborhoods and fine public buildings, than is given in the volume referred to.

The Railroad Supply Company of Chicago was, as usual, represented by their signal engineer, Mr. E. W. Vogel, and also by Mr. F. C. Webb, the company's local representative in Denver, Colo. The company made no exhibit this year except their new lightning arrester, the invention of Mr. Vogel, which is now being put on the market in two styles, namely, mounted on slate base in one or more units, and an enclosed pattern for outside use for attaching direct to lines where the insulated wires extending from the outside lines into the building commence. These lightning arresters are built upon the choke coil principle, which is supplemented by an induction coil. All parts are made heavy and especially designed for railroad use. It is claimed that this arrester will positively stop all damage to instruments and that it never opens grounds or deranges the line. The arrester is furnished without fuses, as the same are positively not required.

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of TELEGRAPH AGE, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

A Decade of Wireless Telegraphy.

Wireless telegraphy is now ten years old. On June 2, 1896, there was filed in the British Patent Office a provisional specification "for improvements in transmitting electrical impulses and signals and in apparatus therefor," by one Guglielmo Marconi, residing at No. 71 Hereford Road, Bayswater, England.

At the time this patent was applied for the art of transmitting messages without wires was wholly unknown, in so far as its practice and utilization were concerned, and the drawings and description of the improvements cited gave neither the layman nor scientist an inkling that the arrangement was one of the most important since those first brought out in the allied classes of telegraphy and telephony, or that the young inventor was destined to take rank with Morse and Bell as a genius who had materially advanced civilization by devising a new means for the transmission of intelligence.

Exactly a decade has elapsed since the filing of that memorable patent, and the great and far-reaching progress made in the art in the brief period past is well known. There are, however, some salient features that have been brought out in the development of the new telegraphy that are not so well known, and to these attention may be appropriately called at this particular time.

After the first successful trials were made across the Bristol Channel between Lavernoch and Flat Holm, a distance of 3.3 miles, by Marconi, and during these notable tests, in which he became cognizant of the great value of using high aerial wires and earthed terminals, the feasibility of telegraphing through space without wires by the Hertzian wave method could no longer be doubted, and all other schemes for producing similar results were abandoned.

Notwithstanding the favorable issue of the experiments, there was yet much to be done before the system could be made commercially practicable, and the young inventor labored zealously to extend the limitations that hemmed it in on all sides. Nor was he alone now in the great work that confronted him, for numerous investigators on both sides of the Atlantic became imbued with the possibilities the new art offered. To increase the range of signaling was the first and most important step, and after that, the desirability of securing selectivity, so that a number of messages could be sent in the same field of force without suffering extinction.

Marconi was perhaps the most persistent experimenter in the bridging of greater distances, while very early in the development of the new telegraphy Lodge turned his attention to the production of a selective system by means of electrical resonance. The former succeeded so well in his task, that from three miles in 1897 he was enabled to send and receive signals three thousand miles in 1904; while the latter, although he failed to evolve a commercially selective apparatus, led the way for the timing of the sending and receiving circuits individually and syntonizing them collectively.

The work of Lodge and his successors has resulted in the beautiful compound open and closed oscillators and resonators, both close and loose coupled, that give, in the refined apparatus we have at the present time, the highest efficiency of operation with the least expenditure of initial energy.

Another important feature of recent date is the utilization of auto-detectors in connection with telephone receivers as receptors for the translation of incoming electric waves into the alphabetic code of dots and dashes. This adjunct may be attributed to American ingenuity, and was a difficult but well-taken step leading toward the goals of accuracy, rapidity, and simplicity, for it eliminates virtually all of the difficult adjustments found in the coherer and Morse register receptors, permitting a very great increase in the speed of reception, and greatly reduces the number of essential parts of the equipment. De Forest was probably the first in the commercial field to use the auto-detector and telephone receiver, while Fessenden has conferred a lasting benefit upon science and humanity by his ingenious detector, the liquid barretter, an instrument that in its sensibility, its ruggedness, and its simplicity is second only to the telephone receiver of Bell.

With these improvements, chiefly made within the past five years, wireless telegraphy is all that the most exacting critic could hope for, if we except selectivity, and in this especial branch of the work there is yet unlimited opportunity for the wireless inventor to exercise his ingenuity.

So much for the physical advances made during the past decade, in transmitting messages without wires. Its usefulness as a commercial factor has been universally recognized, and not only has the mercantile marine service been very largely equipped, but the different governments are fully alive to its possibilities in time of peace and war. Not only have the ships of the world's navies and strategic shore stations been equipped with some make of apparatus, but the armies of various countries have used it overland with considerable success.

Overland wireless telegraphy has been tried out commercially within the past few years; and while it is practical from the viewpoint of operation, the interference between stations leaves it a poor competitor of the wire system. It has competed more successfully with the shorter cables, and elaborate experiments are now being conducted by Prof. Fessenden and Dr. De Forest, working independently in the effort to establish permanently transatlantic cableless telegraphy. Should the results prove practicable, it is extremely doubtful if they will in any way affect the cable companies, as is popularly supposed.

The wireless patent situation has been aired in the United States courts to some extent, and it would seem from the decisions handed down that the claims of Marconi in his original patent of

ten years ago, i. e., "a receiver having a sensitive tube or other sensitive form of imperfect contact capable of being restored with certainty and regularity to its normal condition," will be upheld during the life of the patent. As a matter of fact, the electrolytic detector or barretter of Fessenden comes under this claim, although this question has not been answered by process of law.

The present indications are that there will be no litigation between the Marconi and Fessenden interests; and in so far as the United States is concerned, there is reason to believe that of the several companies now making and selling apparatus, many will be driven entirely out of the business, one or two will be allied with the Marconi company, and the fittest only will survive, forming a parallel with the interesting case of the Bell telephone of thirty years ago. If this should prove true, it will show not only the value of fundamental patents, but that which is of equal importance, namely, to have the claims so drawn as to properly cover both methods and apparatus.—Scientific American.

Directed Wireless Telegraph Messages.

The transmission and reception of two or more wireless telegraph messages simultaneously in the same zone of action, or selectively, as it is called, is a problem second only in its abstruseness to the telephonic relay, that scientific will-o'-the-wisp over which inventors have struggled ever since Bell devised his apparatus to send and receive articulate speech over wires.

Many solutions, electrical, mechanical, and electro-mechanical, have been provided to secure selectivity, but at the end of a decade of wireless telegraphy it seems that all the labor expended in this direction has been virtually in vain, in so far as the coveted goal is concerned, though through the researches in electrical resonance excellent results have been achieved in tuning and syntonization, which important factors are largely accountable for the present degree of advancement in long-distance wireless signaling.

Since it is sometimes more convenient to enter a window than to go through a door, many inventors have ceased trying, at least for the time, to discover the "open sesame" of selectivity, and have confined their efforts to the easier task of directing, within certain limits, the wireless waves. Artom, of Italy, was the first to evolve such an arrangement and attain favorable results: this he did by means of circularly polarized electrical radiations, which he produced without resorting to reflection grids, as is necessary in the case of light waves.

Much simpler than this Italian physicist's method is one recently made public by Marconi, while the experiments of the latter indicate that a wider range of usefulness will be given the previously inflexible wireless transmitter and recep-

tor than has yet been known. Briefly, the scheme is this: When one end of an insulated horizontal wire (the other end of which is free) is connected to one side of a spark gap of an induction coil, and the other side of the gap is earthed, the electric waves emitted by the wire will reach a maximum in the vertical plane of the horizontal wire, and proceed principally from the end connected to the spark gap, the radiation being imperceptible in any other direction approximating 100 degrees from that in which the maximum effect takes place.

Similarly, if an insulated conductor is laid on the ground or placed a short distance above it, and the end nearest the sending station is connected to one side of an electric wave detector, the other side of which is earthed—leaving the opposite terminal of the wire free—the maximum effect will be evident only when the receiving and transmitting wires are in alignment with each other.—Scientific American.

The Railroad.

The Grand Trunk Pacific Railway, the northernmost and the longest transcontinental line of railroad ever projected on this Continent, and which is now being constructed across Canada, originated in the mind of Charles M. Hays, its president. Mr. Hays, who is also the second vice-president and general manager of the Grand Trunk Railway System, is, like Sir William C. Van Horne, who built the Canadian Pacific Railway, a native of the United States. Both came from Illinois and both in early life were telegraph operators.

The announcement was made June 13 that the Grand Trunk Pacific Railway Company of Canada, will establish and operate a new telegraph system in connection with the proposed transcontinental railway now in course of construction. The new telegraph company has been incorporated by parliament with a capital of five million dollars, and permission will be asked by the company to carry on a public telegraph business throughout the Dominion. As stated some time ago, the Grand Trunk Pacific Railway Company will doubtless later install a long-distance telephone service over its entire system.

Mr. A. T. Hardin, who has been appointed assistant general manager of the New York Central and Hudson River Railroad, on all lines east of Buffalo, except the Boston and Albany, began in the railroad service as a telegraph operator. Subsequently he went to college. He is thirty-eight years of age. Mr. P. E. Crowley, who has been made general superintendent of what is known as the Western district, and Mr. C. F. Smith, who has been promoted to be general superintendent of the Eastern district, also began life as telegraphers. Mr. Crowley is forty-two years old, and Mr. Smith thirty-three.

Obituary.

DEATH OF GEORGE F. FAGAN.

In the death of George F. Fagan, chief clerk in the general manager's office of the Postal Telegraph-Cable Company, New York, on June 24, that company loses a highly valued and capable employee. Had he lived until September 8, he would have been fifty years of age. Illness compelled him to leave his desk on April 20, to which he never returned, sinking slowly, yet with a cheerful resignation, under a disease that from the first marked him as its own. Mr. Fagan possessed a pleasing personality, quiet in manner, yet alert to the duties of his position, the details of which he held in a firm and intelligent grasp. He had been in the telegraph service all his life, and had an extended knowledge of its requirements. His place brought him in contact with many, so that he became widely acquainted with telegraph people throughout the country. He was held in high esteem by a large circle of friends. It may be said of him that his faithfulness and loyalty were never questioned. His devotion to duty was a marked characteristic of the man. He is survived by a widow, two daughters, one of whom was lately married, and by a young son.

Mr. Fagan was born in New York city September 8, 1856, and began his telegraphic career as a messenger boy for the Atlantic and Pacific Telegraph Company at Broadway and Thirty-fourth street, New York, in 1872. He soon after found employment with the Western Union Telegraph Company, where he filled successively a number of clerical positions, finally becoming private secretary to Charles A. Tinker, then the general superintendent. He entered the Postal employ in December, 1899, taking the position that he afterwards held during life. Mr. Fagan was a Mason, for fifteen years past the secretary of Anglo-Saxon Lodge, F. and A. M. He was also a member of the Telegraphers' Mutual Benefit Association, Gold and Stock Life Insurance Association, Old Time Telegraphers' and Historical Association, and other telegraph organizations. He was the first secretary of the Magnetic Club. The funeral was held at his late residence, 346 Chauncey street, Brooklyn, on Tuesday evening, June 26, at which there was a large attendance of his late associates, the brethren of his lodge and a number of the executive officers of the Postal and Western Union telegraph companies. Immediately after the religious funeral service the impressive ceremonies of the Masonic order were conducted by the officers of the Anglo-Saxon lodge.

Mr. W. E. Herring, manager of the Postal Telegraph-Cable Company of Texas, at San Antonio, Tex., in renewing his subscription writes: "The valuable and interesting articles published in TELEGRAPH AGE are too numerous for me to mention. I cannot see how a person interested in the telegraph or telephone business can afford not to be a subscriber."

Subscribe for TELEGRAPH AGE, \$1.50 a year.

Delayed Telegraph Messages.

(From the Central Law Journal, St. Louis.)

The great number of instances in which telegraph messages are delayed without one particle of excuse makes the question one of great interest. It is true that the great weight of authority is against allowing damages for the mental suffering caused by such delays, on the ground that such an element is too uncertain for proper measurement. Yet the fact that such delays do cause in many people very great agony of mind is certain at least to those who have been prevented from reaching the sick beds and death beds of those who are dear to them. Here is a great wrong permitted to go unpunished because of some judicial opinion to the effect that the element is too uncertain to permit of measurement, and yet the law gives a jury a right to measure physical pain and suffering as an element of damage. We have a rule of law which is made to prevent wrongs where one party mixes his goods wrongfully with another's in such a way as to be unable to distinguish his from the other. The law will compel the party committing the wrong to undergo the uncertainty of the confusion brought about by his misconduct even to the extent of surrendering the whole even though his may have been the most and by reason of this aiding of the remedy against the wrong-doer the law is made effective to prevent wrongs.

The great telegraph companies of the country have grown rich in the returns from the public which they serve; the service is a great and beneficial one, it is true, and deserves to be well paid, but the public has a right to demand the best service which may be rendered within reasonable limits. It is not unreasonable to demand that telegrams which announce the illness of near relatives or friends should be delivered with the greatest possible promptness and that a failure to do so should be met with a policy of the law which will tend to prevent the wrong of it. It is morally certain that in those states where the law recognizes the pain and suffering caused by such delays in question as an element of damages there are fewer delays than in those jurisdictions which do not. The law is a rule of civil conduct prescribed by the highest power of the state not only to command what is right but to prohibit what is wrong. Now it is a fair question to ask, and one worthy the serious consideration of every one, which of these jurisdictions is making it possible to best prevent a kind of a wrong which it is a burning shame to permit to go unpunished?

Why mental suffering may not be expected to follow certain wrongful acts which might give rise to them as certainly as that physical pain should follow wrongful acts which result in bodily injury, is indeed difficult to understand when we consider how many uncertain elements are

permitted to enter into the policy of the law in order to prevent wrongs. When parties enter into contracts which are to run a period of years, and one of them wrongfully refuses to be further bound by its terms, the conditions existing on the day of the breach are taken into consideration in order to estimate the profits for the future, which the injured party might have made by a faithful performance of it. There might be shown to be many elements of uncertainty in the future of the contract, but the policy of the law to prevent wrongs leaves them out of consideration. It would seem in those cases which do not recognize the mental suffering which results from a wrongful delay in delivering a telegram to a mother, a husband or a father, or any one who ought to be informed and had a right to the prompt delivery, that the element of the law which is intended to prevent wrongs was left out of consideration. It would naturally occur to any one that a husband or wife or mother might be greatly shocked to know that a wife, husband or child had been very ill for a day and that a telegram should have been delivered a day sooner, but for the negligence of the agents of the company.

In the recent case of *Hamrick v. Western Union Telegraph Company* (N. C.) 52 S. E. Rep. 252, the court reiterated the doctrine previously laid down in that state that in such cases damages may be recovered. It is also worthy of note in this regard that the supreme court of North Carolina has one of the strongest supreme benches of the country, the opinions of which are most worthy of confidence and respect. Alabama, Texas and Kentucky are in line with North Carolina, and we predict that this doctrine will become the law generally. Any one who has witnessed the agony of a mother resulting from a delay in a telegram informing her of the serious illness of a child at a long distance from her, would hardly fail to see the wisdom of the policy of the law which regards such suffering as a proper element of damages, for which there should be a recovery. There is good reason why the mental suffering in the case of delayed telegrams, at least, should be compensated in damages separate and apart from the proof of other injuries for which damages might be allowed arising out of the same matter.

[Mental anguish is a form of suffering pitiful in the extreme, a condition of mind well calculated to arouse and enlist human sympathy. Even when caused by a delayed telegram it is no less so. But because this is true no warrant exists why vilification of the telegraph companies should follow, and assertions made that frequent delays in the delivery of telegrams such as those announcing sickness, death, etc., was a common contributory cause for this state of mental suffering, are not borne out by the facts. Why should it be that a holdup of telegrams of this

character should prevail to the extent alleged as against other messages treating on every phase of human interest and activity?

As a rule, positive as to be almost without exception, telegrams do not suffer delay at the hands of the companies under ordinary conditions; rare omissions in prompt delivery may usually be traced to unavoidable causes, such as the breaking down of wires, etc., and the Central Law Journal of St. Louis is in error when it attempts to formulate charges of this character so manifestly untrue in fact. The telegraph companies make it a point to get off messages as quickly as possible after they are filed, the unwritten law being to "Keep the hooks clear." As a matter of fact, we should hear less about the mental anguish law if it were not "worked" by unprincipled persons to an extent of which few outside of the telegraph have any conception. It may surprise our legal contemporaries to learn that messages are frequently sent with no other purpose in view than to pave the way for the senders to bring suits against the telegraph companies for damages.—Editor.]

The Summer Outing of the Magnetic Club.

In spite of lowering skies which brought occasioned heavy showers of rain, thus rendering out-of-door sports wholly out of the question and consequently disarranging that part of the programme which the athletes of the Magnetic Club had confidently counted upon in which to show their prowess, the members of this famous organization, which celebrated its nineteenth annual outing at Cove Hotel, Staten Island, on Tuesday, June 19, nevertheless had a good time. Although the steamer Western Union made its two accustomed trips to convey voyagers across the bay to Staten Island, and did its duty with manifest readiness and despatch, fewer were present, perhaps, than usual, for rain always acts as a deterrent, and some of those who did show up looked "dem'd damp and moist," as Mr. Mantalini might have said. Yet on the whole, with time occupied indoors, where everything was snug and comfortable, by games at bowling, where prodigious scores were rapidly run up by "ten strikes" and "spares;" cards, bagatelle, etc., the afternoon wore quickly and pleasantly away.

Dinner was served at seven o'clock, with Marston R. Cockey, the first vice-president of the club, presiding. Agreeable music was furnished by four musicians, and a humorist added piquancy to the scene. As the various prizes that had been provided could not be regularly awarded, as no contests had taken place, they were disposed of by lot, the drawing, conducted by Frederick Pearce and Frank J. Scherrer, taking place immediately following the dinner. Much fun was had during the proceedings.

The gentlemen who donated the prizes were: Colonel R. C. Clowry, Clarence H. Mackay, William H. Baker, H. L. Shipley, John C. Barclay, George Clapperton, J. B. Van Every,

F. W. Jones, J. J. Ghegan, Foote, Pierson and Company, B. M. Downs, Frederick Pearce, F. M. Ferrin, C. C. Adams, William Marshall, George H. Usher, James Kempster, Theo. L. Cuyler, Jr., M. H. Kerner, Schulte Tobacco Company, through C. P. Bruch.

Among those present were:

J. F. Ahearn, T. A. Brooks, E. B. Bruch, M. R. Cockey, J. W. Condon, J. Connor, J. W. Connolly, John Costelloe, Theo. L. Cuyler, Jr., F. E. Donohoe, B. M. Downs, L. F. Dowling, Lewis Dresdner, W. A. Ebert, W. A. Egan, William Finn, T. E. Fleming, R. E. Fagan, J. W. Gibbons, W. Gibbons, G. W. Hickey, Charles Jacobson, Alex. Klein, C. A. Kilfoyle, W. A. Kamp, George H. Kellar, H. G. Kitt, H. C. Landres, G. W. McAneeny, J. F. McGuire, W. B. McCurdy, T. J. McDonald, F. E. McKiernan, G. H. Messner, Gerard Marshall, G. L. Marshall, R. B. Marr, D. W. Meek, F. J. Miller, F. D. Murphy, R. J. Murphy, F. J. Nurnberg, M. J. O'Leary, Captain Olmstead, C. F. Pearce, Fred Pearce, H. L. Patterson, A. E. Price, C. Adams-Randall, J. H. Schaber, F. J. Scherrer, E. R. Suydam, H. F. Van Every, J. West.

Western Union's Quarterly Statement.

The Western Union Telegraph Company reports for the quarter ended June 30 as follows, the figures for this year being partly estimated, while those for last year were actual:

	1906 (est.)	1905 (act.)	Changes.
Net earnings . . .	\$1,750,000	\$1,701,007	Inc. \$48,993
Int. on bonds . . .	331,300	331,300	
Balance	\$1,418,700	\$1,369,707	Inc. \$48,993
Dividend	1,217,022	1,217,021	Inc. 1
Surplus	\$201,678	\$152,686	Inc. \$48,992
Prev. surplus . . .	16,659,191	15,821,523	Inc. 837,668
Total surplus . . .	\$16,860,869	\$15,974,219	Inc. \$886,660

The company's fiscal year ends with June 30. We are, therefore, able to present a comparison with the last two fiscal years, the figures for the current year being partly estimated, while those for the previous year are actual:

	1906 (est.)	1905 (act.)	Changes.
Net earnings . . .	\$7,079,948	\$7,188,065	Dec. \$108,117
Int. on bonds . . .	1,325,200	1,227,200	Inc. 98,000
Balance	\$5,754,748	\$5,960,865	Dec. \$206,117
Dividends	4,868,088	4,868,083	Inc. 5
Surplus	\$886,660	\$1,092,782	Dec. \$206,122
Prev. surplus . . .	15,974,209	14,881,427	Inc. 1,092,782
Total surplus . . .	\$16,860,869	\$15,974,209	Inc. \$886,660

The Western Union Telegraph Company has declared the regular quarterly dividend of 1½%, payable July 16. Books closed June 20 and will reopen July 2.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

The Adams-Randall Telephone Transmitter.

The Adams-Randall device of a telephone transmitter appears to be attracting considerable attention among railroad people, for in a number of instances it has made on workable long-distance telephone circuits surprisingly audible speech, even a whispering voice, it is said, being heard at a distance of 1,000 miles. In this connection the several reports printed herewith respecting this transmitter, will prove interesting to railroad telegraph superintendents, who naturally are on the lookout to secure the most efficient telephone service for their respective systems.

Mr. J. C. Barclay, assistant general manager of the Western Union Telegraph Company, New York, writing under date of August 24, 1905, says:

The following is a copy of Mr. William Finn's report on your recent demonstration of a composite telegraph-telephone circuit, on one of our New York-Albany wires:

"The trials were mainly conducted over a Morse circuit between New York and Oswego, N. Y., repeated at Albany, the telephone apparatus being installed at the latter point and at 195 Broadway.

"The wire between New York and Albany—147 miles long and measuring about 750 ohms—runs through a 200-conductor underground cable as far as John and Pearl streets, through a 19-conductor aerial cable strung under the elevated railroad for a distance of 8½ miles, then passes through a 60-conductor cable under the Harlem river, and out over a pole line carrying from 20 to 35 working wires until it reaches the Hudson river at Albany, where it is submerged for about three-quarters of a mile before entering our main office in that city.

"The first attempts to talk over this circuit were not successful, owing to the interference arising from induction, which was so strong as to be audible all over the room in which the experiments were made.

"By use of shunts, and by otherwise diminishing the sensibility of the receiver, the inductive effects could, however, be so far modified as to admit of ordinary conversation being carried on with greater or less facility; but it was not until a more powerful transmitter was constructed that the results obtained could be regarded as in any way suitable for practical purposes.

"With the new transmitter, which enabled the receiver to be still further desensitized, and correspondingly less susceptible to the inductive disturbances, the intensity of the sound waves was greatly increased, and though lacking in timbre or quality, the articulation was surprisingly good considering the character of the circuit and the tremendous disquieting influence from neighboring simplex, duplex and quadruplex circuits to which it was subjected.

"The 'calling' apparatus—devised on the buzzer principle—met the requirements most perfectly, and without in the slightest degree affecting the working of the Morse instruments."

C. E. Freeman, professor of electrical engineering of the Armour Institute of Technology, Chicago, in writing to Mr. Marshall, of the Adams-Randall Company, under date of January 29, 1906, has this to say:

I have had the pleasure of talking to Mr. Randall and others at Weehawken, New Jersey, from the office of Mr. W. C. Brown, of the Lake Shore Road, Chicago, by means of the Adams-Randall transmitter. As to the quality of the transmission, I would say that it was all that could be desired. While I had an opportunity to compare it with the action of the Bell set, I neglected to do so, owing to my interest at the time in the Adams-Randall device. Judging, however, from the repeated requests for repetition by those who were using the Bell, and the absence of

these requests by the same persons using the Adams-Randall transmitter, I judge that the Adams-Randall was giving better service under the conditions of operation, which, I understand, were practically identical for the two.

G. W. Wilder, professor of telephone engineering of the Armour Institute of Technology, Chicago, in a letter also addressed to Mr. Marshall, of the Adams-Randall Company, on January 29, 1906, makes the following statement:

In regard to your recent tests between Chicago and New York over the lines of the Lake Shore and New York Central Railroad, I would say that I witnessed many of them with great pleasure, and can say that they were indeed remarkable. In the office at the La Salle street station, Chicago, the circuit was so arranged that by turning a simple switch one could connect a Bell telephone to the line wires or the Adams-Randall instrument. The tests that I witnessed were carried on over the line using these instruments alternately, and in every case during all these tests, which extended over several days, I found the transmission through the Randall instrument superior both in volume and articulation to that produced by the Bell instrument. As near as I could estimate the Randall instrument was at least four times better than the Bell. I remember two or three instances in which speech was obtained over the line through the Bell instrument with great difficulty, repetition being constant and unsatisfactory. At the same time the Randall instrument talked up clearly and distinctly. I also remember one particularly bad day when the disturbing noises on the line were so great as to render speech impossible over the Bell, that the Randall instruments were a success commercially. At no time during all of these tests did I find a Randall instrument unable to transmit speech in an entirely satisfactory way.

On several of the days during which the above tests were made, the transmission through the Bell instruments was good, and would be considered entirely commercial. On these days I noticed that the articulation was much clearer and more perfect through the Randall instrument than through the Bell. In fact, this was always true, although one would not expect a difference when speech is transmitted well over each. The quality of the tones was so clear and distinct that I never had to ask the party at the other end to repeat his sentences, while with the Bell instrument at least fifty per cent. of the conversation was repeated, even on the best days. I also noticed that others had this same difficulty.

Mr. Edison and the Discovery of Cobalt.

Mr. Edison, who has been investigating the mineral resources of North Carolina, remarks that he has discovered deposits of cobalt in several counties of that State, of fine quality and available for storage battery purposes. Mr. Edison is reported to have said: "My discovery means a revolution in the electrical world. I can reduce the cost of city traffic 55 per cent. When I can equip an automobile with the cobalt system the storage battery weight will be one-half, and then prices will be reduced so as to place electric with in the reach of everybody. I am confident that what I have found will enable me to create a new vehicle, propelled by cobalt batteries."

Cobalt, in limited supply, has been hitherto imported from France and Australia.

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LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

PHILADELPHIA, WESTERN UNION.

On June 15, Mr. I. D. Maize of this office rounded out a half century as an operator, most of the time being spent with this company. He seems likely to spend a good many more years with us, for he is a fine operator still and not afraid of work, doing several hundred messages every day on the second New York quadruplex. In the tournament held here several years ago he won the championship in the old-timers' receiving contest.

A fine No. 2 Smith-Premier typewriter, the property of the late Miss Ida Hussey, was raffled off recently, the lucky winner being Denny Coyle.

Harry Emanuel and Harvey, better known as Swiftly, Williams, are paired for the Boston tournament. They will do bonus work. R. C. Murray, Jr., and C. B. Wood will be in attendance, the former acting as one of the judges.

O. M. Pennypacker, a life-long resident of Norristown, Pa., has moved to this city.

Elmer Beidelman has returned to this office after an absence of about five years.

A good deal of sympathy has been felt for Mr. H. Wobensmith, chief of the clerical department. Twin sons were born to him several weeks ago, an event that was followed first by the death of one and then by that of the other. In the meantime Mrs. Wobensmith was critically ill, but at last accounts her condition had improved materially.

NEW YORK, WESTERN UNION.

Mr. George F. McCammon, son of T. A. McCammon, chief operator, was married recently to Miss Hazel Starr, of Denver, Col., where the McCammon's resided before coming to New York.

Mr. Joseph Knittle, formerly of this department, is seriously ill, having suffered his second stroke of paralysis.

Mr. Dennis F. Sullivan of the Eastern division is on the sick list.

Mr. J. F. King of the all-night force, has resumed duty after several weeks' absence, due to an attack of rheumatism.

Mr. James J. Grace, assistant western wire chief, has resigned and returned to Chicago, the

change made necessary because of the illness of his wife.

Charles S. Pike has been acting as traffic chief of the city line department, during the past two weeks on account of the absence of Mrs. May.

Mr. "Ardy" Gillman, who had charge of the Western Union fishing excursion recently, is explaining scientifically to all his friends why he failed to catch any fish during the trip.

Mr. Frank D. Giles, assistant chief operator, and Mr. E. T. Burrill, general traffic chief, have lately become grandfathers.

Messrs. A. Wohlrabe and W. H. Mayer have been assigned to leased circuits.

As usual a goodly number of representative telegraphers were on hand to dispose of the Western Union business at New London, Conn., during the Yale-Harvard races. Mr. R. J. Murphy was in charge, assisted by J. Rosenbaum; W. L. Wingate, J. S. Moffatt, F. R. Bishop, J. A. Walsh, J. F. Kerrigan and F. W. Gribbon.

The following operators have been transferred to summer offices: Miss G. Jones, Miss Jennie Powell, Miss Clara Ayres, Miss Glase, Miss K. Mahoney, Miss B. Goodson, Miss S. Oakes and Mrs. Levinson; Mr. C. A. Harvey and Mr. S. J. Murray.

Mr. E. J. Brannagan has been transferred to Brooklyn.

NEW YORK, POSTAL.

The following have been assigned to branch offices: A. M. Cervanter, Violet Develin, M. Gray and Hilda Olsen; O. Conly has gone to a summer office, and J. Hutton has been transferred to the bookkeeping department.

The resignations are: D. Dillon, N. Dolan, C. Hanson, J. Wells, A. Berggren, J. H. Blasdell, N. Crawford, C. Cramer, E. Hemman, F. McNeil, T. Murray, Tilly Palmer, G. O. Heath, R. J. McIver, A. Morris, J. N. Reilly.

OTHER NEW YORK ITEMS.

Assessment No. 450 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of Charles D. Livermore, at Portland, Me.; William P. Frost, at Hartford, Conn.; James C. Wilson, at Indianapolis, Ind.; James F. Malone, at New Haven, Conn.; and William H. Hill, at Brooklyn, N.Y.

The word "Aerogram," to designate a message sent by means of wireless telegraphy, is approved by a contemporary. It says: "Aerogram is well formed from the Greek words meaning 'air' and 'to write,' and admirably designates 'writing through the air.' It is easily pronounced, concise and to the point, and is appropriately analogous to the word 'telegram.' 'Aerogram' should come into universal use. Educated persons appreciate a well-formed word. If the editors of daily papers made 'aerogram' an office rule, the public would soon adopt it."

Submarine Cables.

A paper on "Submarine Cables" was read by Mr. W. Smith at a meeting of the Birmingham and District Electric Club on April 21. For electric light and power conductors under the sea, the author recommended vulcanized rubber insulation. Telegraph cables, he explained, on the other hand, are almost universally insulated with gutta-percha, and cables made at the present time differ but little from those made in the early days of ocean telegraphy. The conductor, insulated with gutta-percha, is taped, then protected by some fibrous material, sheathed with galvanized iron or steel wires and finally finished off with a serving of yarn and tape. The author mentioned the various grades of armoring, the deep-sea, intermediate and shore-end, with overall diameters of about one inch upward. As a protection from the ravages of certain small marine animals, he said, powdered silica is often mixed with the compound applied when serving the cables, and as a further protection a wrapping of brass tape is sometimes applied. He next mentioned the All-British Pacific cable, opened to the public in December, 1902, of which the section between Fanning Island and Vancouver is the greatest length yet laid in one piece—about 4,000 geographical miles. This particular portion of the cable is made in a rather different manner to the remainder; the conductor consists of five strands, the four outer being closed around the central wire in such a manner that while retaining the advantages of a strand, there is almost as much copper as in a solid conductor of equal diameter. Thus, without much loss in conductance, the capacity is considerably reduced. Various forms of light, that is, of low specific gravity, cables had been employed, he continued, but apparently with little success. In order to keep down the weight it had been suggested to protect submarine cables with a layer of aluminum tape, but it was doubtful whether this would be satisfactory, considering the rapid action of chlorine on aluminum. He next referred briefly to "loading" telephone cables with inductance. It did not appear feasible to use an alloy for the conductor, he said, as alloys had a higher resistance than their constituents when taken separately. If inductance coils were introduced, iron must be very carefully employed or sounds were not clearly transmitted. Any such apparatus, although comparatively easy to attach to underground lines, would, he thought, be difficult to use in the case of a submarine cable lying in a depth of some 3,000 fathoms. Air spacing (which, he stated incidentally, did not appear to have been a success on some underground lines) could hardly be suggested for deep-sea cables. As well as transmitting the sound, some means were required to rectify the tendency of the sound wave to distortion; not only was it necessary to have amplitude, clear articulation was also required.—London Electrician.

From the Telegraph Key to \$40,000,000.

Through the proposed incorporation of a \$40,000,000 business house, which will be effected soon, Wall street has had called to its attention the meteoric rise of a man who fifteen years ago was a telegraph operator. He is Richard W. Sears, of Sears, Roebuck & Co., of Chicago, the greatest retail house in the West. He is to be head of the new company.

Goldman, Sachs & Co. and Lehman & Co., bankers, of New York, have formed a syndicate to finance the new concern, which will have \$10,000,000 preferred stock and \$30,000,000 common.

Representatives of the banking houses named said that plans have been practically completed for launching the industrial enterprise and that \$10,000,000 of preferred stock would be acquired by the Wall street bankers. The story of the growth of the enterprise under the direction of Richard W. Sears, they said, was like a page from the "Arabian Nights." Eleven years ago the firm had a capital of \$150,000. In a few days a charter will be taken out in New Jersey by the same firm for a \$40,000,000 corporation. Last year the firm earned net \$3,000,000. It is asserted that now its business is \$5,000,000 a month. All this is done by mail and for cash in advance of shipment.

Friends of Richard W. Sears, the head of the firm, stated that he began the mail order business while he was employed as a telegraph operator on the Northern Pacific. In his spare moments he sold watches and firearms to his fellow employees on the railroad. The success of the scheme prompted him to go to Chicago, where he opened a store devoted wholly to mail order business. The firm was assisted by Moses Newborg, now a Wall street banker and broker, and it started with a capital of \$150,000. One of Mr. Newborg's partners at that time, Julius Rosenwald, is now associated with Mr. Sears. Mr. Roebuck has retired.

In the eleven years the business has grown by leaps and bounds. It now employs 8,000 clerks and has 6,000,000 customers. There are eighteen railroads which enter its plant and 100 cars are shipped daily. It gives no credit and money must be sent in advance.

Credit is given in banking quarters to the remarkable genius of Mr. Sears, who has directed the entire business. He is not yet forty-five years of age. The enterprise built up within the last few years now comprises a small city, with its own police force, schools, hospitals, etc.

Those who contemplate subscribing for **TELEGRAPH AGE**, and who would first like to inspect a sample copy, should not fail to write for the same.

The new classified catalogue of books on the telegraph, telephone, wireless telegraphy, electricity, etc., published in **TELEGRAPH AGE**, may be had for the asking.

Important Subjects Treated in Back Numbers.

TELEGRAPH AGE has published the best articles on telegraphic subjects that have ever appeared in print. Herewith are enumerated a few of the most important subjects treated, together with the date of the papers containing the same. Copies of these back numbers may be had at twenty-five cents apiece upon application. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

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Wireless Telegraphy at Sea.....	Mch. 1, 1904
Yetman Transmitter (Description and Engraving).....	Aug. 1, 1903

Books on the Submarine Cable.

The following list presents an excellent choice of books, with prices, treating on the submarine cable, about every phase of which is discussed. The works named are standard and are of a character that should insure ownership of the lot by every cable man who seeks to acquire a fuller knowledge of the subject of his profession. They are a library in themselves. They will be sent singly or collectively, as may be required, carrying charges prepaid, on receipt of price. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York:

Baines, G. M.—Beginners' Manual of Submarine Cable Testing and Working.....	\$3.50
Bright, Charles—Treatise on Submarine Cables.....	\$25.00
Hoskier, Capt. V.—Guide for the Electric Testing of Telegraph Cables.....	\$1.50
Fisher and Darby's—Students' Guide to Submarine Cable Testing.....	\$4.00
Kempe, H. R.—Handbook of Electrical Testing.....	\$6.00
Mullaly, John—The Laying of the Cable; or, The Ocean Telegraph.....	\$4.00
Parkinson, J. C.—The Ocean Telegraph to India.....	\$4.00
Smith, Willoughby—The Rise and Extension of Submarine Cables.....	\$9.00
Wilkinson, H. D.—Submarine Cable Laying and Repairing.....	\$5.00

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Personal.

"Old Farmer" Lawton, night manager of the Western Union Telegraph Company, at Denver Col., who became by unanimous vote of the convention of Railway Telegraph Superintendents, lately assembled in that city, an associate member of the association, was presented with a miniature telegraph key by a couple of his New York friends, who took advantage of the occasion to tender the little instrument. E. P. Griffith, superintendent of telegraph of the Erie Railroad, and J. B. Taltavall, Editor of TELEGRAPH AGE, figured in the affair, accompanying the gift with a written resolution, expressive of the esteem in which the "Old Farmer" is held in telegraphic circles in New York. The key is a highly-finished production, perfect in its mechanism, and is one of those distributed as a souvenir on the occasion of the banquet tendered to the Old Time Telegraphers' and Historical Association at the Waldorf-Astoria, at its memor-

able meeting in New York in August, 1905.

Mr. E. Payson Porter, of the operating department of the Western Union Telegraph Company, New York, has obtained a leave of absence for the summer, and will pass his entire vacation at his home at Asbury Park, N. J.

Mr. W. Y. Nolley, for the past four years manager of the Postal Telegraph-Cable Company of Texas, at Dallas, Texas, has resigned, to go into business for himself. He has been succeeded by Mr. W. L. Jones, for three years manager of the same interests at Fort Worth, Texas, the management of the latter office being filled by J. W. Gilliam, transferred from Fort Smith, Ark.

Recent New York Visitors.

Mr. H. H. Hall, manager of the Postal Telegraph-Cable Company at Ashtabula, Ohio, who has been spending several weeks visiting his married daughter in Brooklyn.

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Wanted—The address of W. T. Backus and J. P. McCarthy, who were operators in the Oil City, Pa., office of the Western Union Telegraph Company in 1869-70. Address F. A. Stumm, 147 East 21st street, New York.

For Sale.—A new Yetman transmitting typewriter; practically has never been used; \$70. W. C. Graves, 210 Girard Trust Building, Philadelphia, Pa.

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"This book belongs with the best class of popular scientific literature. While it is strictly elementary, in the sense that it begins with the elements, it nevertheless gives a very comprehensive survey of the entire field of telephone apparatus and construction. * * * In order that the book may be fully comprehended by the beginner the discussion of the telephone proper is preceded by an admirable chapter on the theory of sound and another on the fundamental principles of electricity. While not a 'primer,' the book is thus one which anyone can read if he has enough interest in the subject to try."—American Machinist.

The volume contains 375 pages, 268 illustrations and diagrams; it is handsomely bound in black vellum cloth, and is a generously good book.

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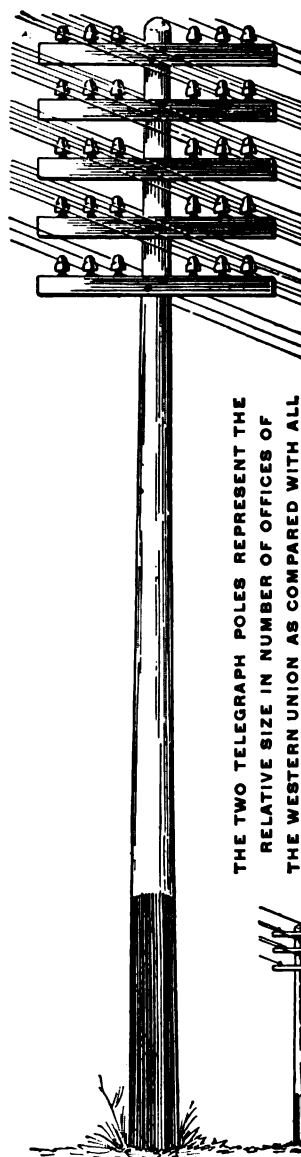
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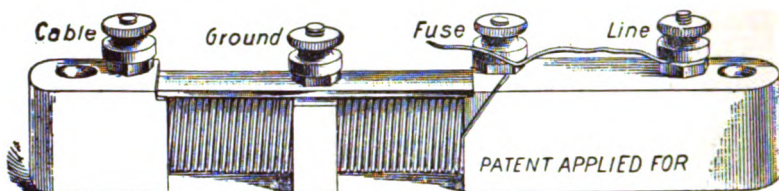
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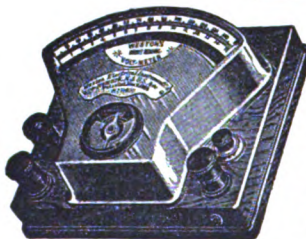
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ESTABLISHED
1883

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NEW YORK, JULY 16, 1906.

Whole No. 556.

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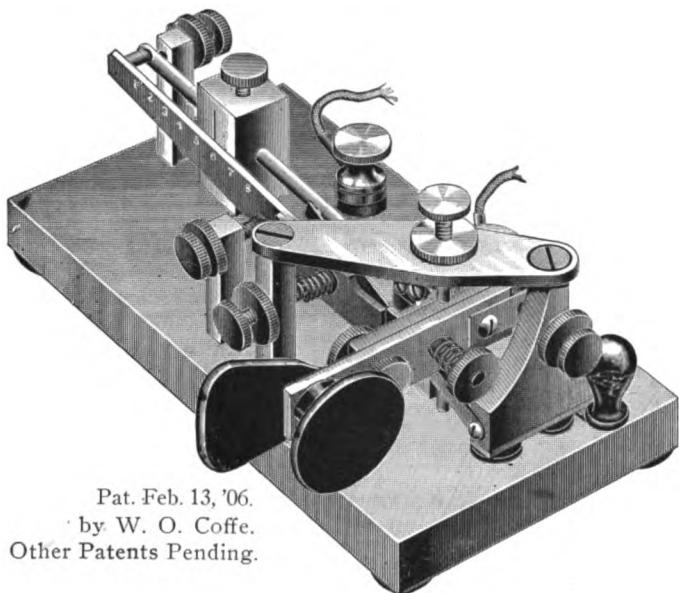
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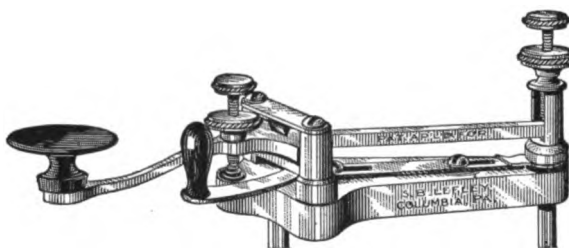
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TELEGRAPH AGE

No. 14.

NEW YORK, JULY 16, 1906.

VOL. XXIV.

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SOME POINTS ON ELECTRICITY.

In Three Parts—Part I.

The Loopswitch and Loopswitch Testing.

BY WILLIS H. JONES.

When the great advantages derived through the possibilities of a modern loopswitch and its equipment is considered, the wonder is that early telegraph service could have been even reasonably satisfactory without one. On the other hand, however, the present greater exactions of the public is no doubt due to the ample facilities offered by means of this device and the patrons' knowledge that better service may now be demanded.

As the loopswitch is to be found in large telegraph centers only, there are obviously many who have never seen one and whose knowledge of its use is therefore somewhat limited. For the benefit of all such the following description may be of interest:

The term "loopswitch" is not intended to indicate that this board is made up of loops, or for the purpose of making loop connections only, although the great number of loops proper ending in wedge and cord placed in the board no doubt originally suggested the title.

The modern loopswitch contains not only branch office and newspaper loops, but a great number of repeaters of all kinds, "run overs," intermediate batteries, batteries for testing pur-

poses, connections with the "time clock," office legs, and extensions to the private offices of the various officials of the company. All of these accessories are available when called for, and may be distributed to any main line switchboard or section thereof, or to any multiplex set in the operating department by means of the various extension devices illustrated in the accompanying cut, which appears in "Pocket Edition of Diagrams."

The loopswitch board itself is made up of a great many springjacks arranged side by side in rows, one above another. Each springjack, except those connected with battery and otherwise assigned, is connected with two conductors which end in wedges, as shown by the figures 2 and 3. The wedge end and cord are located in the various main line switchboards throughout the operating department for insertion in the main line circuits as desired. By means of these extensions any loop located in the loopswitch may be extended to any main line switchboard by merely inserting the wedge terminal of such loop in the numbered springjack at the loopswitch which corresponds with the number of the cord and wedge terminating in the main line board.

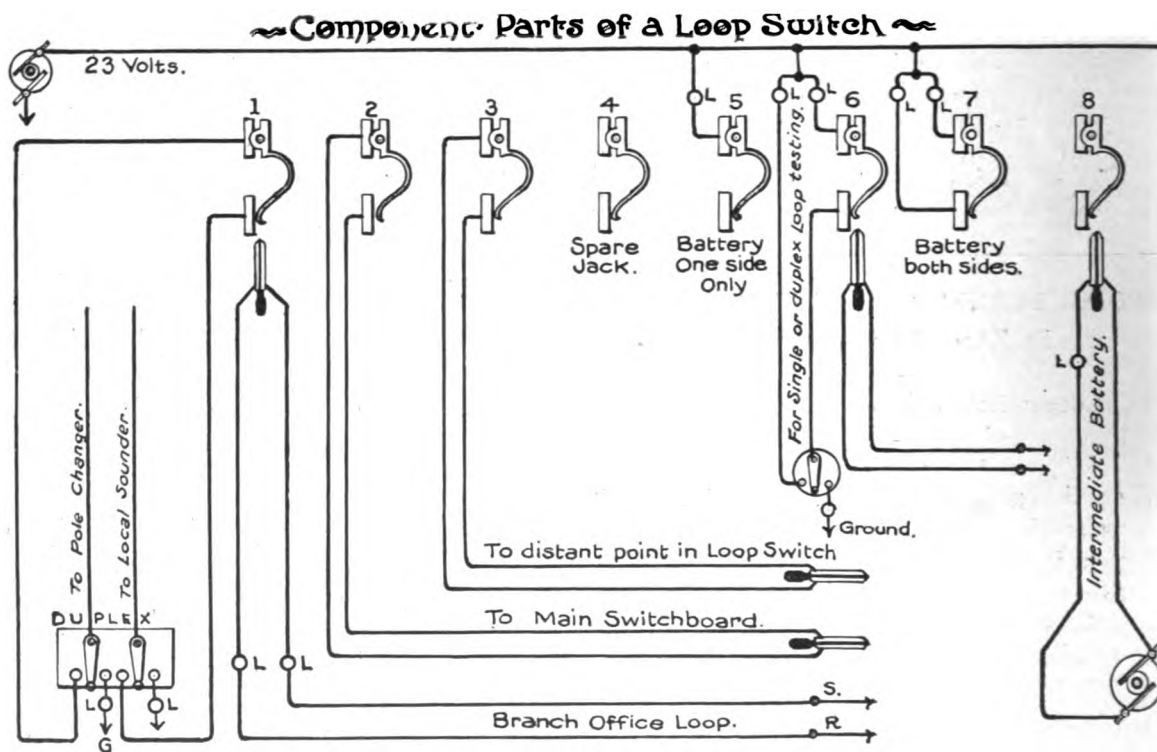
A similar springjack cord and wedge combination, all contained in the loopswitch board, is called a "flip," and is used for the purpose of extending loops from one part of the switch to another, when the loop cord itself will not reach the springjack in which the wedge is to be inserted. One springjack and two conductors are connected with the local three-point switch of each duplex, and to each side of every quadruplex apparatus in the office, as shown by the figure 1. When no loop is assigned to such apparatus the current flows through the resistance lamp joined to the right hand disk, which resistance is made equal to that of the loops. When a loop is inserted in the wedge at the loopswitch, as shown by the figure 1, the multiplex switch lever is shifted from the lamp disk to the one on the left, thereby causing the same volume of current to flow through the branch office loop to the earth at that terminal. Behind the loopswitch board are as many lamp sockets as there are conductors to branch offices. In these sockets lamps are inserted each containing the required amount of resistance that is necessary to build that conductor up to the uniform value of resistance assigned to the desk lamps on the right hand disks. The amount of resistance usually given

to the desk lamps is made approximately equal to that of the longest branch office loops, and the short loops are built up to that value. The object of this uniformity in resistance is to enable the chief operator to provide current for both the desk locals and the various branch office loops from one single source. Thus in a modernly equipped office one dynamo usually furnishes all the current for both branch and desk connections for every multiplex apparatus in the office. The figure 5 shows a springjack in the loopswitch with battery connected to the upper lip only. This battery is available for many different purposes. It is principally used for making up temporary local circuits. For example, should we desire to desk a newspaper or other branch office loop contained in the loop-

The figure 6 shows a testing device with battery on both lips of the springjack possessing the addition of a three-point switch and a ground connection. This device is useful for testing loops both duplex and single. When the switch lever is turned to the left the springjack has battery on both lips, for duplex testing. When the lever is shifted to the right, however, the battery on the underlip is disconnected. Hence: an ungrounded or "single" loop will show clear when the disconnection of the ground lamp by means of the lever "opens" the loop.

(To be continued.)

[Important articles by Mr. Jones, appearing in back numbers are as follows, and may be had at the regular price of ten cents a copy, except those appearing prior to a year from the current date, for which a charge of twenty-five cents apiece will be made:



switch for the purpose of receiving or transmitting an overflow of matter, the insertion of the desk and the loop cords in such an arranged springjack, with a dummy "ground" wedge underneath, would form a closed circuit and obviate the necessity of borrowing a wire or other close circuit from one of the various main line boards. The figure 7 shows a similar springjack in the loopswitch with battery on both lips. This device is used principally for testing duplex loops, and the voltage of such battery is made the same as that assigned to the multiplex apparatus. It has the advantage of preserving the receiving side closed. When testing loops remaining on the multiplex set, the relay points are liable to open and interfere with one's test, should conversation be attempted on that side of the loop.

A Useful and simple Testing Device. January 1, 1904; The Bad Sender, His Past and Future. January 16; The Transmitting Typewriter Wire Connections. February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged. March 16 to April 16, inc., June 1 to July 16, inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex. August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, inc.; Switchboard Practice at Intermediate Stations. December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire. February 1; A Few Useful Methods. February 16; Co-operation. A Hint for Wire and Quad Chiefs. March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires. March 16; Elementary Information Concerning Household Electrical Appliances. April 1 to May 1, inc.; The Barclay Printing Telegraph System. May 16; Polarized and Self-Adjusting Relays for Single Line Circuits. June 1; Limitations of Quadruplex Circuits. June 16; Electric Power From the Clouds. July 16; Concerning Condensers and Retardation Resistance Coils. August 1; District Call Box Service. August 16; The Art of Studying. Sept. 1; Other Methods of Splitting a Loop. Sept. 16; The Sextuplex. Oct. 1; A Few Questions Answered. Oct. 16; Positive and Negative Currents. Nov. 1; The Education and Evolution of a Chief Operator. Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output. Dec. 1; The Telephone—First Principles. Dec. 16; Jan. 1, 1906; Questions Answered. Jan. 16; The Storage Battery. Shunt and Compound Wound. Feb. 1-16, March 1; The Storage Battery. March 16-April 1-16-May 1-16; A New Double Loop Repeater—Com-

parative Efficiencies of a Polar and a Neutral Relay, June 1;
Influence of Weather on Static—An Electrical Phenomenon, June 16;
Induction, Leakage, Crossfire, July 1.]

THE INFLUENCE OF WEATHER ON STATIC.

Editor TELEGRAPH AGE:

Supplementing my letter published in your issue of June 1, regarding the remarkable phenomena of the dusty deposit observed on wires attached to walls and ceilings, I enclose these photographs taken by me in a warehouse in New York city. You will notice the difference between the two wires, one being sharply defined, whereas the other side of the circuit is blurred, caused by the dusty deposit on it and the ceiling. These three photographs were taken at widely separated parts of the same building, one in the office, one in the hallway and the other in a room used for packing cotton goods. In each case it is the ground wire which is the clean one.



WALTER M. PETTY,
City Electrician.
Rutherford, N.J., July 8.

Business Notice.

The Simplex Company of Salt Lake City, Utah, advertise in another column Leiser's Simplex Telegraph Transmitter, of which they are the manufacturers. This transmitter, which is one of the newer devices of like character, has apparently been thoroughly tested as to its capabilities before being offered on the market. Exhaustive and successful trials on all kinds of circuits in the Salt Lake Western Union telegraph office, covering a period of six months, are offered in evidence of its utility. For four months it was used constantly on the Chicago-Salt Lake local with reported signal success, like results also having been obtained on the San Francisco-Salt Lake local. Regarding the speed and adjustment of this instrument, this statement is made: "A weight is moved to and from the armature axis for speed. The contacts for making the signals are so arranged that they come together with a sliding or lapping motion; (adjustable, so that either heavy or light sending may be sent out, irrespective of speed); i. e., either heavy or light sending, on either a fast or slow speed—neither of

which conflicts with the other. The latitude of adjustment is unlimited, working equally satisfactorily on a single wire, quadruplex, duplex, through innumerable repeaters, or a weather-bound wire."

The company is now prepared to furnish these instruments, the price of which is \$15, in any desired amount, and invite correspondence, whether in regard to purchase or of inquiry more fully respecting the device.

Municipal Electricians.

The eleventh annual convention of the International Association of Municipal Electricians, will be held at New Haven, Conn., on Wednesday, Thursday and Friday, August 15, 16 and 17. The following papers will be read: "History of the Fire and Police Telegraph," by Adam Bosch, Newark, N. J.; "Details of Certain Auxiliaries to Fire Alarm Apparatus," by J. B. Yeakle, Baltimore, Md.; "Advisability of Protecting Municipal Electricians by the Civil Service Laws," by Jerry Murphy, Cleveland, O.; "Comparison of Underground and Overhead Wiring, and of the Relative values of Single, Rubber covered Wire and Lead Incased Cable for Underground Construction," by W. H. Thompson, Richmond, Va.; "Conditions Surrounding the Inspection of Wires in the Southwest, (with Special Reference to the Advisability of one Inspector Completing each Inspection instead of several Inspectors each doing a part of it.)" by Clarence R. George, Houston, Tex.; "Question Box," by Walter M. Petty, Rutherford, N. J.

Among the deaths in the wreck at Salisbury, England, early Sunday morning, July 1, of the boat train running from Plymouth to London, and conveying passengers from the American line steamer New York, were Louis Cassier and John E. McDonald, both of New York. Mr. Cassier, who was forty-four years of age, was the publisher of the magazine bearing his name and of Electrical Age, a journal which was started originally by the publisher of TELEGRAPH AGE, and successfully conducted by him for a number of years. Mr. McDonald, who was but thirty-five years old, was an active young business man in the telephonic and telegraphic field. He was president of the Boston and New York Telephone and Telegraph Company, president of the Knickerbocker Telephone and Telegraph Company, treasurer of the Massachusetts Telephone and Telegraph Company, treasurer of the Telephone, Telegraph and Cable Company of America, and president of the Thomson Hill Land and Improvement Company.

If you are not familiar with TELEGRAPH AGE, a postal card request will bring a sample copy to your address.

Personal Mention.

Mr. Emmett Howard, formerly manager of the Western Union Telegraph Company, at Memphis, Tenn., and who now is engaged in the insurance business at Tampa, Fla., going to that point almost an invalid from bronchitis in January last, has wholly recovered his health.

Mr. William H. Young, night manager of the Western Union Telegraph Company, at Washington, D.C. and president of the Old Time Telegraphers' and Historical Association, is taking a brief vacation among the mountains, whither he has gone for a rest after the arduous duties performed in connection with the long session of Congress.

Mr. W. H. Adkins, the well-known old time telegrapher, of Atlanta, Ga., traffic chief of the Southern Bell Telephone and Telegraph Company at that point, has been advanced to the position of general sub-license agent of his company. Since his connection with telephone interests his advancement in that service has been rapid. Mr. Adkins' fine abilities are receiving deserved recognition, and his many telegraph friends rejoice at the success that has attended him in his present field of occupation.

The Cable.

Cables interrupted July 12, 1906:
Venezuela, Jan. 12, 1906
Messages may be mailed from
Curacao or Trinidad.
Pinheiro "via Cayenne" Aug. 13, 1902

Capt. R. G. Halpin, of the cable steamer "Britannia," died on June 8, at Falmouth, England. Capt. Halpin entered the Eastern Telegraph Company's service in December, 1888, and was at the time of his death only thirty-seven years of age. He was well known in cable circles throughout the world.

It is stated that the Storthing of Norway has accepted a proposal of the director of telegraphs of Germany for the laying of a cable between Germany and Norway to unite Cuxhaven and Arendal. The Norwegian Government is to subscribe about 1,500,000 francs towards the cost of the work. It is stated that the telegraphic rate between Norway and Germany will be reduced.

The new cable steamer "Cormorant," built for the Western Telegraph Company, was launched at Paisley, Scotland, June 7. The new vessel is a strongly-constructed single-screw steel steamer built throughout to Lloyd's highest requirements. The machinery is placed amidships and is of triple expansion type with usual auxiliaries. Forward and aft of machinery space large cable tanks are fitted. The bow gear is neatly wrought into the fiddle bow, and a steam cable winch is fitted forward, also a special steam winch aft. The decks and woodwork throughout the steamer are of teak.

A complimentary dinner was given at Shanghai in April by the American Association of China to the vice-president and general manager of the Commercial Pacific Cable Company, Mr. George Gray Ward, of New York. Forty-six sat down to table, half being guests. The president of the association, Dr. Gilbert Reid, presided at one end, and the Consul-General for the United States, Mr. James L. Rodgers, presided at the other. The object of the event was to celebrate the completion of the new Pacific cable. Mr. Ward is in Japan at the present time.

Recent Telegraph Patents.

A patent, No. 824,031, for a telegraphic transmitting key, has been obtained by Isidor Kitsee, Philadelphia, assignor of one-half to William J. Latta, Philadelphia. In combination with a line of transmission are a transmitting key embracing a main lever connected to the line, a contact lever on each side of the main lever connected each through stationary contacts with the ground, stationary contacts connected to sources of current and means whereby through the movement of the main lever the line is connected to one or the other of the sources.

The following patent has expired:

No. 406,406, for a telegraph pole, issued to C. M. Russell, Bowling Green, Ky.

Resignations and Appointments.

The following change has occurred in the Western Union Telegraph Company's service:

Mr. A. H. Krum has been advanced from the position of operator to be manager of the office at Ithaca, N. Y., vice J. A. Casterlin, resigned on account of ill health.

Another Stone Deaf Operator.

Editor TELEGRAPH AGE:

The item in TELEGRAPH AGE of July 1, referring to the "Marvelous Work of a Stone Deaf Operator," recalls another similar case. During the year 1858 or 1859, an operator named Hoffman, familiarly known as "Dummy" Hoffman, employed in the Washington, D.C., office of the American Telegraph Company, although stone deaf, worked the heaviest wires without the slightest difficulty by placing his feet against the table legs. If any one stamped on the floor it would cause him to break and swear. He could also understand everything that was said by the motion of one's lips. He afterwards worked in the Mobile, Ala., office, dying some time after the Civil War was over.

WILLIAM H. YOUNG.

Washington, D.C., July 4.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

Western Union Telegraph Company.**EXECUTIVE OFFICES.**

Among the recent executive office visitors were Mr. Charles F. Annett, manager of the New Haven, Conn., office.

Mr. B. F. Woodward, now a prosperous resident of Denver, Col., for over thirty years a prominent figure in telegraph circles in the West, was also a recent visitor. Mr. Woodward was an operator in New York in the early fifties.

Mr. W. J. Lloyd, assistant superintendent at Chicago, Ill., sailed from New York on the steamer Caledonia for Glasgow on June 30. Mr. Lloyd was accompanied by his wife and two children, and will be absent about six weeks.

Mr. W. N. Fashbaugh, electrician of the Eastern division, has returned to his office after an absence of some weeks spent at the North Sydney, Cape Breton, cable station, whither he went to install a storage battery system, dynamotor and dynamo plants and an oil engine equipment.

Mr. A. J. Brown, formerly foreman of construction of this company, and well-known in line construction departments, died on July 2. His funeral, which occurred on July 4, was largely attended by members of the telegraph fraternity.

Mr. F. O. Nourse, general inspector of the Southern division, Atlanta, Ga., has been promoted to the position of assistant superintendent under Mr. J. R. Terhune, with headquarters at Nashville, Tenn. Mr. Nourse's abilities in the telegraphic field were made clear when he was associated with the New York office. Since he has been in the South his advancement has been steady and is a further recognition of the capacity of the man.

Postal Telegraph-Cable Company.**EXECUTIVE OFFICES.**

At a meeting of the Executive Committee of the Postal Telegraph-Cable Company, held on July 3, the resignation of Mr. Edgar C. Bradley as second vice-president and as a director of the company, the same to take effect July 1, was received and accepted only upon Mr. Bradley's assurance that he regards such course as his best interest, and with the understanding that Mr. Bradley shall act in an advisory capacity until August 1. A resolution was adopted by the committee expressive of regret at the retirement of Mr. Bradley after nearly fifteen years of efficient and faithful service in behalf of the company, coupled with the hope that his prosperity and happiness in the future might be assured.

The retirement of Mr. Bradley necessitated a shift of officers, and changes were effected as indicated by the election of the following-named gentlemen:

Mr. George G. Ward, second vice-president, vice Mr. Bradley; Mr. Charles C. Adams, third vice-president, vice Mr. Ward; Mr. Charles P. Bruch, fourth vice-president, vice Mr. Adams, and a member of the executive committee, and

Mr. Thos. E. Fleming, assistant secretary, vice Mr. Bruch.

The committee assigned to Mr. Adams the duties formerly discharged by Mr. Bradley; to Mr. Bruch the duties formerly assigned to Mr. Adams, with the understanding that Mr. Bruch shall continue to be and to perform the duties of assistant general manager, and to Mr. Fleming the duties of assistant secretary, with the understanding that he shall continue to be and to perform the duties of special agent.

Mr. F. J. Kernan was appointed traveling auditor of the company, and charged with the duty of making direct examination of office accounts under the direction of the auditor. Mr. Fleming will continue under the direction of the general manager to report on the general condition of offices and to adjust all defalcations as heretofore.

Charles C. Adams, who has been elected third vice-president of the Postal Telegraph-Cable Company, has passed his entire career in the telegraph service. He is a native of Freeport, Pa., is in the prime of life and will reach his forty-



CHARLES C. ADAMS.

Third Vice-President Postal Telegraph-Cable Company.

eighth birthday on August 13 next. His entry into the Postal employ dates from February, 1884, when he was appointed manager of the Philadelphia office, from which he was promoted to the superintendency of the district in 1886. In 1902 he was transferred to Atlanta, Ga., there becoming general superintendent of the Southern division. He was called by his company in 1904 to fill the position of fourth vice-president at New York, then a newly-created office. Mr. Adams is a fine executive officer and possesses a wide and practical knowledge of the telegraph business.

Charles P. Bruch, who becomes fourth vice-president of the Postal Telegraph-Cable Company, has been identified with the Postal company since June, 1891, entering that service as assistant to the vice-president. On January 1, 1893,

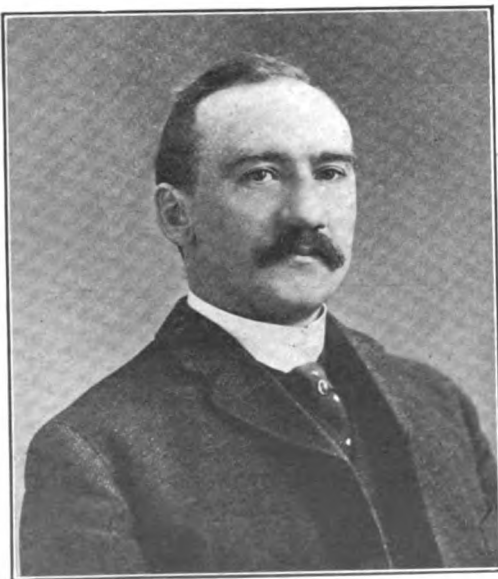
he was made assistant secretary, and since September 22, 1898, has also filled the responsible office of assistant general manager. Mr. Bruch is a native of Louisville, Ky., where he was born April 20, 1860, although subsequent years of



CHARLES P. BRUCH.
Fourth Vice-President and Assistant General Manager Postal Telegraph-Cable Company.

his early life were spent at Canton, Ohio, where he learned to telegraph, and was first employed as an operator just twenty-eight years ago. A large part of Mr. Bruch's business life has been passed in telegraph and collateral business. He has sturdily worked his way and earned advancement by skilled knowledge of his avocation. His management of various departments has been marked by conscientious devotion and intelligent method.

Mr. Thomas E. Fleming, who has just been made assistant secretary of the Postal Telegraph-



THOMAS E. FLEMING
Assistant Secretary and Special Agent Postal Telegraph-Cable Company.

Cable Company, was born in Ireland forty-six years ago. He began his business career as a

messenger in the Western Union Telegraph Company shortly after the removal of that company to 195 Broadway. The advantages of an excellent common school education told in young Fleming's behalf, for he speedily received promotion, first serving as a clerk in the cable department, later going to the French Cable Company, afterwards to the American Union Telegraph Company and the American Telegraph Cable Company, while subsequently serving for a brief term in the superintendent's office of the Western Union Telegraph Company. After a further career of several years, both in and out of the telegraph service, during which time he served as chief clerk, first in the operating department in the Baltimore and Ohio Telegraph Company, New York, he afterwards was employed as chief clerk under W. J. Dealy, when that gentleman was manager of the operating department of the Western Union Telegraph Company. Mr. Fleming served from 1888 to 1897 as secretary of the Telegraphers' Mutual Benefit Association. At the latter date he entered the employ of the Postal company, June 1, 1897, as chief clerk in the general manager's office. He was appointed special agent of the company in 1899. His close knowledge of the details of the business of the Postal company well fit him to undertake the additional work in connection with his old duties that will come under his charge in the dual capacity of special agent and assistant secretary.

Mr. Felix J. Kernan, who was appointed traveling auditor of the Postal Telegraph-Cable Company, is a typical product of that company. He was born in Brooklyn, N. Y., May 28, 1876, and entered the Postal service in June, 1894, as clerk in the service department. From this position he was advanced in February, 1895, to a clerkship in the office of the then general superintendent, J. H. Emerick, where he remained for two years. Thence from February, 1897, to January 1, 1902, he was employed as a clerk in Vice-President Bradley's office, subsequently and to date occupying the post of chief clerk to Mr. Edward Reynolds, auditor of the company.

Mr. Charles C. Adams, third vice-president of the company, has transferred his office, and now occupies the room lately vacated by Mr. E. C. Bradley, second vice-president, resigned; while Mr. Thomas E. Fleming, special agent and assistant secretary, has taken possession of Mr. Adams' former apartment.

Mr. Jesse Hargrave, electrician of the Southern division, Atlanta, Ga., will soon be transferred to New York in a similar capacity. The vacated office at Atlanta will be filled by Mr. J. P. Edwards, now chief operator at Augusta, Ga.

Mr. C. A. Garland, manager at Mobile, Ala., has been appointed acting superintendent of the Eighth District Southern Division, with headquarters temporarily at Atlanta, Ga. Later he will be established permanently at Memphis, Tenn.

Mechanical Morse Transmitters.

BY FRANCIS W. JONES.

The motions required to be made by the telegraph key are made known to the central nervous system of the operator through the medium of sight, and via a set of motor nerves, to the muscles of the arm, hand and fingers which move the key automatically in response to the nervous impulses received from the brain, and at the same time all such motions, including the temperature, roughness of the key knob, etc., are instantly telegraphed back from the finger tips to the central nervous system by a separate set of sensory nerves.

In the use of the keyboard transmitter, the depression of a key by a finger, determines the electrical transmission of the necessary Morse characters to form the letter attached to the key. Here we have a departure from the physiological actions involved in using the Morse key. After the central nervous system, through the eyes, has been informed of the letter required to be transmitted, the eyes must guide a finger to the key, on which the letter is marked, and then one single downward motion of the finger on the key is brought about through the motor nerves and muscles.

The *modus operandi* of the so-called mechanical transmitters known as Vibroplex and Mecograph, is different from either the Morse key, or a keyboard transmitter. In the mechanical transmitter the key or lever has a slight motion from a central or open position, to the right to transmit dots, and to the left to transmit dashes. When moved to the right, a vibrating supplementary lever opens and closes the circuit with regular periodicity (which can be regulated in advance) making dots, and the number of dots transmitted depends upon the length of time the operator holds the lever to the right.

Thus the letter E (one dot) is the shortest time required, and the figure six (six dots) is the longest time. The dashes are transmitted when the lever is held to the left, the letter T the shortest dash, and the figure naught (o) the longest dash. In transmitting the letter B (one dash and three dots) the lever is held a short time to the left, and immediately swung to the right, and held long enough for three dots to be transmitted, and then is restored to the central point.

In this manipulation the use of the ear becomes indispensable to enable the operator to determine the length of time the lever should be held to the right to produce the proper number of dots for the desired letter.

An operator can readily put his hand through an aperture and manipulate a Morse key, without seeing or hearing the instrument, although it is always customary and desirable in practice to have the key operate a sounder near the sending operator as a guide to the ear.

The keyboard transmitter cannot be operated through the sense of touch alone, the eye is ab-

solutely necessary, unless the operator has become so expert and accustomed from long use to the keyboard that it has become indelibly pictured upon the mind, and the fingers are thus enabled to reach the required keys by a delicate sense of location and touch but little short of instinct. Thus an expert sender can work blindfolded, if the matter to be sent were stored in the memory, but with no assurance of accuracy, unless a sounder were employed to inform the ear.

In transmitting the alphabet by the Morse key, seventy-seven motions or cycles by the hand and fingers are necessary; by the mechanical transmitter fifty-three, and by keyboard, twenty-six; the latter may be divided between right and left hand.

In a day's work it is probable that the motions of the hand would average: Morse, 100 per cent.; mechanical, 70 per cent., and keyboard, 33 per cent.

The long continued use of the fingers and arm, subject to a limited vertical motion, becomes wearing upon the nerves and muscles involved in the use of the Morse key, and sooner or later, according to the general health and strength of the operator, results in numbness of the hand and loss of grip.

The Morse key signals, by a strictly first-class operator in prime physical condition, are not equaled for good carrying quality by any of the present mechanical transmitters in the hands of ordinary operators. Like piano players, there are but few Morse sending operators who rise above mediocrity, and produce a uniformly rapid and firm touch of the circuit contacts of the key. If prizes were given for the best Morse sending, over long circuits, such as between New York and Chicago, or Chicago and San Francisco, it would be of great advantage to telegraph companies, but the prizes at present given for "spurt efforts" on local circuits in a tournament hall serve no useful purpose.

Long ocean cables and transatlantic overland lines have for some time been advantageously operated by Wheatstone automatic transmitters. It is found that with a prepared tape that causes the signals to pass into the cable or line with unvarying speed and precision, as to duration of electrical impulses, and spaces between them, that more messages can be received upon the recorder in a given time than can be done when the sending is manual by the very best operators.

In Morse key sending, the right arm and hand rest on the table and the fatigue is reduced to a minimum. It would greatly prevent the loss of grip if two keys were used alternately, one by the right hand and the other by the left.

The keyboard transmitter, in the most perfect form, is capable of sending into the line uniform signals, so far as each individual letter is concerned, but the spacing of letters and words, and utilizing the time on the wire to the greatest advantage, depend on the expertness and endurance of the operator. Many good receiving

operators dislike the stiff machine character of the signals, claiming them more tiresome than good key signals. The great increase of unfamiliar cabalistic cipher words, has rendered their repetition by the sender a necessity, and the key sender slows down to the capacity of the receiver and repeats, but the keyboard machine, geared to do rapid work, cannot slow down, so the nervous strain on the receiving operator is very great. Both arms and hands of the keyboard manipulator have to be used the entire day without any support, and the left hand is not available for the very necessary numbering and timing of messages; and besides this, his eyes have to be making excursions backwards and forwards between the message being transmitted and the keyboard, so that it occasionally happens that the eyes return to the wrong word or line of the message.

A mechanical transmitter well made, and accurately adjusted, in the hands of a first-class operator who has thoroughly mastered its action is capable of producing satisfactory signals, but it is found in practice that there are but few operators who can manipulate this instrument, which depends on a good ear, steady nerves, and an accurate estimate of time, to produce satisfactory signals. The tendency in most cases is to allow the lever to return to zero too quickly, thus shortening the duration of the last dot, or dash, as the case may be, so that the chiefs at repeater stations complain of the difficulty of passing the signals made by ordinary operators upon such machines. This clipping of signals is often aggravated by poor adjustment of the moving parts, which do not permit the last dot in a letter to be made as firmly as the first dot, and the dots not so firmly as the dashes, and there exists the same disadvantage in the transmission of cipher words as has been mentioned in connection with the keyboard machine.

Wireless Telegraphy.

The delegates of the United States to the International Wireless Telegraph Conference in Berlin, to be held October 10, will be General James Allen, Rear Admiral H. N. Manney and John I. Waterbury.

The DeForest Wireless Telegraph Company has appealed to the recorder's court in Quebec, Quebec province, against an assessment for \$1,000 personal tax for its business in Quebec city. The company argues that as it does not use any poles or wires, like the other telegraph companies, it is not liable for the tax.

The Dominion Government has been asked to establish wireless telegraph stations between Atlin, B. C., and Quesnelle, Yukon Territory, about 1,200 miles. This portion of the Yukon telegraph line is subject to frequent interruption during the winter, and is a source of great expense for repairs, etc. The Minister of Public Works has promised to have a report prepared as to the cost.

A patent, No. 824,682, for a method of practicing wireless telegraphy, has been awarded to André Blondel, Paris, France. The method of wireless telegraphy consists in producing at one or more transmitting stations electromagnetic waves in groups of different predetermined frequencies and actuating at one or more receiving stations signal-receiving instruments each selectively with one of the different transmitted group frequencies.

A patent, No. 824,676, for a wireless telegraph system, has been granted to Harry Shoemaker, Philadelphia, Pa., assignor to Marie V. Gehring, Philadelphia, and International Wireless Telegraph Company. In a wireless signaling system are an aerial conductor, an earth connection, wave-responsive devices connected in parallel with each other and connected to separate condensers between the aerial conductor and earth connection, and a local circuit including the wave-responsive devices connected in series with each other.

Book Review.

"The Management of Electrical Machinery" is the title of a thoroughly revised and enlarged edition of the old standard work of "The Practical Management of Dynamos and Motors," written by Prof. Francis B. Crocker and Dr. S. S. Wheeler. Since the appearance of the original edition of this work in 1892, one complete revision of the book has been made and corrections introduced from time to time. The rapid progress of electrical engineering has brought about changes so radical that another thorough revision became necessary. This is exemplified in the present edition, and the volume now in hand offers to its old readers and new, an up-to-date expression of its subject matter than which there is nothing superior offered. To the telegrapher it affords a clear understanding of the use, care and operation of motor generators and other appliances, important adjuncts of a well equipped modern telegraph office.

The volume contains 218 pages of text, has 131 illustrations, and a carefully arranged index. Price \$1, express charges prepaid. Address all orders to J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

General Mention.

Mr. E. H. Millington, superintendent of telegraph, Michigan Central Railroad, Detroit, Mich., in a recent letter writes: "TELEGRAPH AGE becomes of more interest and value each year."

Mr. E. C. Davis, of the Western Union Telegraph Company, Dallas, Tex., has accepted the position of manager of the relay office of the San Pedro, Los Angeles and Salt Lake Railroad, at Salt Lake City, Utah.

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NEW YORK, JULY 16, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientage. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The retirement of Mr. Edgar C. Bradley from the position of second vice-president and as a director of the Postal Telegraph-Cable Company, noted fully in another column, has made way for the promotion of several of the higher executive officers of the company. The readjustment of forces thus effected, which tends to consolidate and impart additional strength to the company management, is made in accordance with the well-known policy adopted by the Postal company of advancement from within its own official staff, and is accordingly considered as a recognition of meritorious services. The Postal is a well officered company, the executive staff being made up of long experienced and well-trained telegraph men, harmonious in thought and purpose of action, who possess a fundamental, comprehensive and intelligent grasp of the great property interests they are called upon to administer.

The telegraphic tournament held at Boston, in Tremont Temple, on June 29, presented a warm contest in the telegraphic arena, and resulted in bringing a number of new names to the front of speedy operators to divide and share honors with the experts who in the past have gained eminence and reputation at the key. While the speed attained did not equal that achieved at former tournaments, the beauty and perfection of the quality of the all-round work performed has never been excelled. The affair was admirably conducted, reflecting credit only upon those who had it in charge, and from a financial standpoint it was also a success. A full account of the tournament will be found in another column.

The point raised some time ago by Attorney John N. Sebrell, Norfolk, Va., counsel for the Postal Telegraph-Cable Company, that all suits against telegraph companies on the statutory penalty of \$100 for failing to deliver a telegram, should be tried in the Corporation Court and not in the Court of Law and Chancery, as has been the custom, has been decided adversely by the Court of Appeals. The case came up on a writ of prohibition to prevent Judge W. B. Martin trying a certain case against the Postal company. The upper court held that the suits had not been improperly brought in the court of law and chancery.

Honesty of Telegraphers as a Class.

In view of the frequent disclosures of dishonesty in the business and political world, including flagrant instances particularly affecting persons and offices of high repute, as well as of the low moral tone so prevalent as to "graft" in general, the question has been asked by a correspondent, not unnaturally, perhaps, regarding the honesty of telegraphers as a class. We welcome the inquiry for it affords us a suitable opportunity to make clear the real status of the telegrapher in this respect. When one considers the large number of persons employed in this country who depend upon the telegraph for a living, we believe the fidelity of this great body to employing interests will compare most favorably with any other equal number of men of corresponding intelligence and capacity. While the very nature of the telegraph business precludes the payment to employees of what may be termed a generous compensation, even to those holding positions of special responsibility, when measured by the remuneration obtainable elsewhere in other lines of occupation, the records show, nevertheless, but comparatively few lapses from official uprightness of those in telegraph employ. It is not alone that managers and others, who have the handling of money are faithful to the trust reposed in them, but the operating forces have likewise proved themselves honorable and high minded so far at least as their company covenants are regarded. The aspersions that are sometimes wantonly placed upon the operator

affecting his probity of character so far as furnishing information relative to the contents of messages is regarded, with which necessarily he is familiar, are not warranted by the facts, and when irresponsible, uninformed or unscrupulous writers in the daily press so charge, they should be severely rebuked. It is an incident of rare exception when a manager is short in his accounts or an operator betrays obligations imposed by his company. While, of course, honesty should be observed everywhere and under all circumstances; and while it may truthfully be said that to maintain such conditions is but adhering to the plain path of duty, telegraphers after all are but human, like other mortals, and the fact that as a distinctive body they do not yield to temptation in the particulars cited, is a very gratifying reflection to say the least.

Sterling honesty of the old-fashioned type that knows no guile; that presents a face of flint like adamant in the presence of temptation, is a resisting force that will carry one through successfully in the hour of peril. To allow oneself to be placed under temptation, whether because of carelessness in the individual or through lack of proper business methods, is to invite moral disaster.

For the honor of the telegraph in which so many of us entertain abiding hope for its continued welfare, we may be permitted to remark that all within its service, especially those holding positions of trust, may hold only to lofty ideals of moral rectitude.

The Military Telegraphers' Pension Bill in the House.

Editor TELEGRAPH AGE:

Under the above caption in the editorial column of TELEGRAPH AGE of June 16, there appears a letter from Hon. Cyrus A. Sulloway to Mr. F. A. Stumm, wherein appears the following paragraph: "This is a matter that must properly come before the committee on military affairs, and with the conditions as they are the committee on invalid pensions has no jurisdiction in the matter." Mr. Sulloway could not have had in mind Senate bill 2165, which has been in the hands of his committee since February 12, for he is too honorable a man to entertain such views on that bill and then not ask for its reference to the proper committee. That bill which interprets or rather emphasizes the soldier status as provided for in the act of January 26, 1897, was prepared and reported by the pension committee of the Senate and unanimously passed by that body, is a pension measure pure and simple.

After Mr. Sulloway's letter appeared in TELEGRAPH AGE, the Hon. Sereno E. Payne, chairman of the committee on ways and means, and floor leader of the House, was asked to have a reference made of the bill, to which he responded on June 21 as follows: "The bill you speak of does not belong to the military committee and they would have no jurisdiction. It does belong

to the committee on invalid pensions, and you will have to abide their action." Next to the Speaker, who referred the bill, there is no higher authority on the subject in the House than Mr. Payne. The committee on invalid pensions has been almost submerged with private pension bills, and has not had the time to consider general measures, of which the military telegraphers' pension bill is one. Many of its members are in favor of the bill, while the floor of the House is covered with members who are ready to advocate its passage whenever Mr. Sulloway can find the time for his committee to act. It seems that this long delayed act of justice of as brave a soldiery as ever existed in any army awaits only Mr. Sulloway's action, and I have too much confidence in his patriotism to believe that he would willingly or knowingly place himself as a barrier to prevent justice being done to any one who in the Civil War aided in making this a nation and in laying the foundations of the great prosperity and progress this country is now enjoying.

WILLIAM BENDER WILSON.

President of the Society of the United States
Military Telegraph Corps.

Holmesburg, Philadelphia, Pa., July 9, 1906.

Old Time Telegraphers' and Historical Association.

In response to the request made by Mr. William H. Young, of Washington, D. C., president of the Old Time Telegraphers' and Historical Association, who called on the private secretary of President Roosevelt in regard to the appointment of a day when the latter could receive the delegates to the Old Timers' convention which is to meet at Washington, D. C., on October 9, 10 and 11, President Roosevelt said that it would afford him much pleasure to extend a welcome to the telegraphers. Admission to the White House on this occasion will be by ticket. Mr. Young states that the date named by the President was October 10 at noon.

Mr. Young also says that he is greatly encouraged in the work accomplished by the various committees in arranging for the entertainment of the Old Timers next October, and that the meeting promises to be an exceedingly interesting one. No doubt now that President Roosevelt has assigned a time to receive the telegraphers this will prove an additional attraction and draw to the National Capital a large number of old time telegraphers residing at distant points.

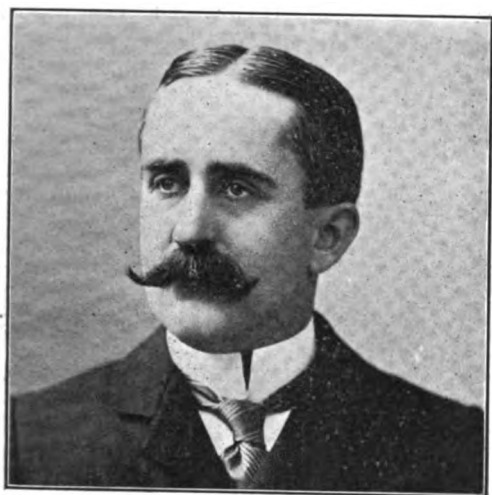
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Those who contemplate subscribing for TELEGRAPH AGE, and who would first like to inspect a sample copy, should not fail to write for the same.

The International Telegraph Tournament at Boston.

BY F. M. MCCLINTIC, OF NEW YORK.

David Jaquith Ellington, not yet twenty-two years of age, and eight years a telegrapher, won the championship for all-round work in Boston, Mass., on Friday, June 29, after some close and exciting finishes. To prove his right to the title, Ellington, who had been in but one previous tournament, was forced to compete with veterans of every grade of telegraphic work, and even his most intimate associates did not feel that he possessed the experience and stamina to finish first. The Boston tournament was held primarily for the purpose of completing a fund for the endowment of a telegraphic bed in one of the Boston hospitals. The end in view was achieved. Not only that, but one of the most successful tournaments ever held was enjoyed by the participants and a goodly audience which filled Tremont Temple from the opening of the railroad classes at 2 o'clock Friday afternoon un-



SIDNEY F. SHIRLEY.

Manager of the International Telegraph Tournament, Boston, Mass.

til the last dot had echoed from the sounder when Charles Edney closed his key in the straight Morse sending class at 2 o'clock Saturday morning. Sidney F. Shirley, who managed the details of the tournament, is deserving of especial mention for the astute manner in which he handled the multitude of duties to be performed. President James J. McGarty and Vice-President Michael J. Reidy were ever present, seeing to it that every visitor was properly taken care of, and every contestant was made to feel that the Boston committee had a personal interest in his welfare. The arrangement of Tremont Temple for the tournament—the separate practice rooms fitted with every conceivable instrument, through the courtesy of Superintendent E. B. Pillsbury of the Postal Telegraph-Cable Company, J. P. O'Donohue, one of the electricians of the same company; the absolute privacy of the judges'

room, and the placing of tables and telegraph apparatus on the stage—was, in the judgment of a telegrapher who has had an active part in the last five tournaments, equal, if not superior, to any. In such contests, there is bound to be great rivalry. Every contestant cannot win—no matter how great may be his ability—and there is always dissatisfaction of some sort. In Boston it was different. The judging was excellent, and those hard-working gentlemen were repaid in a measure for their labors by hearing a variety of Morse that ranged from the swiftest "OS" to the classic rhythm and speed of the winner. There was not a breath of complaint from any contestant; indeed, there was nothing but praise, and everybody seemed to be working with a will for the success of the affair and the endowment of the hospital bed. Among other entertainments that were afforded the visitors, many of whom came from Pennsylvania, New York, Kentucky, the New England and other states, was a trip down the bay on a city tug, greatly through the kindness of Mayor Fitzgerald, who also graced the tournament with a most gracious speech of welcome. The Mayor was introduced by Master of Ceremonies Reidy, who took occasion to pay a pleasant tribute to His Honor, and prove that he (Reidy) is an orator of the first rate, as well as an excellent telegrapher.

Various telegraphic devices were exhibited and their merits passed upon by the visitors. George W. Conkling, general manager of the Delany Telegraphic Transmitter Company, New York, occupied a suite of rooms at the Quincy House, headquarters for the visiting contestants, where he held open house and demonstrated the new "Auto-Dot" to the satisfaction of the critical. Samuel B. Lefley, of Columbia, Pa., inventor of the "Lefley key," which has gained wide popularity among telegraphers of all classes, was present demonstrating his invention, which was highly praised. P. J. Faulkner gave a demonstration with the Vibroplex, manufactured by the United Electrical Manufacturing Company, of New York, just before the close of the tournament, and his work was applauded.

The work of George W. Conkling (who went to Boston at the invitation of the tournament committee) in sending to the classes in straight Morse and Phillips Code, proved that added years have not in any way affected the beautiful precision of dots, dashes and spaces that have won for him praise and prizes in every tournament with which he has been identified. Mr. Conkling used the Lefley key. The only surprise was that every receiving copy was not perfect. The receiving classes were so well filled that each had to be divided into two squads, and Conkling thus sent the 350 words straight press twice and the 500 words of Phillips Code twice. At no time did he exceed forty words per minute in the straight Morse class, and under ordinary conditions perhaps not a single man of the nineteen

entries but that could have copied the perfect sending with a pen. The heat was terrific, however, and perhaps it accentuated the stage fright with which even the old-timer is sometimes affected.

The results follow:

Railroad, Class A.—Sending twenty ordinary railroad messages, each contestant being permitted to follow the custom of the system by which he is employed: First prize, latest model Smith Premier typewriter, won by Richard C. Bartley, of the Pennsylvania Railroad, Philadelphia; second prize, Mecograph, donated by the Mecograph Company, Cleveland, won by James F. Beegan, of the Boston and Maine Railroad, Everett Junction, Mass. Time, 10 minutes, 10 $\frac{2}{5}$ seconds. Bartley reduced his own record, made in Philadelphia, October, 1903, 11 minutes, 12 seconds, in this class. Time, 9 minutes, 36 $\frac{1}{5}$ seconds.

Railroad, Class B.—Receiving twenty ordinary railroad messages on a typewriter: First prize, Remington typewriter, won by William F. Bannester, of the Pennsylvania Railroad, Philadelphia; time 12 minutes, 37 $\frac{4}{5}$ seconds; second prize, Mecograph, won by James W. Harrison, of the Pennsylvania Railroad, Philadelphia.

Brokerage Class.—Sending brokerage and financial business, ten minutes: First prize, solid silver punch bowl, donated by the Boston News Bureau, valued at \$150, won by David J. Ellington, Postal Telegraph-Cable Company, New York; second prize, \$40 in cash, won by Harvey Williams, of Philadelphia; third prize, won by F. M. McClintic, of Watson & Co., New York. The matter transmitted will be found at the latter part of this article.

Team Match.—Sender transmitting twenty-five commercial messages to his receiver, Postal Telegraph-Cable Company rules to govern: First prize, handsome solid silver cups, donated by Clarence H. Mackay, won by David J. Ellington, sender, and H. J. Finn, Postal Telegraph-Cable Company, Boston, receiver, time, 11 minutes, 44 $\frac{4}{5}$ seconds; second prize \$40 in cash, won by Edward Dougherty, of the Logan and Bryan Leased Wire System, New York, sender, and J. P. Gallagher, same system, New York, receiver, time, 12 minutes, 7 $\frac{4}{5}$ seconds; third prize won by Charles F. Edney, of H. W. Poor & Co., Boston, sender, and John J. Bell, of Wrenn Bros., Boston, receiver.

Press, Class A.—Sending 350 words straight press matter: First prize, \$100 in gold, won by David J. Ellington, New York, perfect Morse, time 8 minutes; second prize, \$40 in cash, won by Charles F. Edney, Boston, superior Morse, time 7 minutes, 54 $\frac{2}{5}$ seconds; third prize, won by F. M. McClintic, New York.

Press, Class B.—Receiving 350 words straight press matter, sent by George W. Conkling, of New York, time 8 minutes 56 $\frac{1}{5}$ seconds: First prize, chest of solid silver, valued at \$150, donated by Gen. Charles H. Taylor, of the Boston

Globe, won by Charles F. Edney, Boston; second prize, Fay-Sholes typewriter, won by F. E. Howe, of the Logan and Bryan Leased Wire System, New York; third, P. J. Faulkner, New York.

Press, Class C.—Receiving 500 words press matter, Phillips Code: First prize, \$100, won by Edward J. Coleman, of Providence, R. I., time 9 minutes 31 $\frac{1}{5}$ seconds; second prize, Willard E. Brown, of the Boston Herald; third, F. M. McClintic, New York.

David J. Ellington, of New York, having received a majority of the points, five for each first prize, three for each second prize, and one for each third prize, as prescribed by the Tournament Association, was declared the winner of the world's championship for all-round telegraphing. Mr. Ellington, having won the most points, as prescribed by the International Telegraphers' Tournament Association (under whose auspices the tournament was held), was declared winner of the Carnegie international trophy for the championship of the world—a cup valued at \$250.

Entries in Railroad, Class A:—B. F. Blaisdell, B. and M. R. R., Boston; James F. Beegan, B. and M. R. R., Everett Junction, Mass.; C. W. Blake, B. and M. R. R., Lynn, Mass.; G. W. Broderick, N. Y., N. H. and H. R. R., Lynn, Mass.; Richard C. Bartley, Pennsylvania R. R., Philadelphia.

Judges.—R. P. Lindsey, B. and M. R. R., Boston; C. E. Mahoney, N. Y., N. H. and H. R. R., Boston; George W. Conkling, New York.

Entries in Railroad, Class B.—Gilmore Miller, Pennsylvania R. R., Altoona, Pa.; James W. Harrison, Wm. F. Bannester and G. W. Smith, Jr., Pennsylvania R. R., Philadelphia; F. H. Wright, N. Y., N. H. and H. R. R., Boston.

Judges.—A. D. Price, N. Y., N. H. and H. R. R., Boston; J. F. Mickler, B. and M. R. R., Boston; F. S. Hollis, N. Y., N. H. and H. R. R., Boston.

Entries in Brokerage Class.—Harvey Williams, Philadelphia; F. M. McClintic, New York; Charles F. Edney, Boston; E. F. Dougherty, New York; David J. Ellington, New York; Joseph Haskell, Boston.

Judges.—H. A. Stanley, of Charles Head and Company; James P. Seely, of Harvey Fisk and Sons; J. Stewart Carr, of Hornblower and Weeks; Hugh J. Gillespie, of George C. Brooks and Company, and James J. Benelisha, of Towle and Fitzgerald, all of Boston.

Entries in Team Match.—Harvey B. Williams and Harry V. Emanuel, Philadelphia; Edward F. Dougherty and Joseph P. Gallagher, New York; A. J. Mackler and L. G. Thornton, New York; Charles F. Edney and John J. Bell, Boston; Joseph F. Cronin and William E. Conroy, Boston; David J. Ellington and H. J. Finn, New York and Boston; Joseph Haskell and E. S. Blake, Boston; H. F. Wood and W. E. Stimson, Boston.

Judges.—George D. Boursey, of Lee, Higginson and Company, Boston; F. B. Travis and J. A. Coughlan, Postal Telegraph-Cable Company.

Boston; George H. Bell, Long Distance Telephone Company, Boston; Robert Murray, Jr., Western Union Telegraph Company, Philadelphia.

Entries in Press Sending, Class A, 350 Words Straight Matter.—James H. Anderson, Newport, R. I.; George H. Wright, Danvers, Mass.; James F. Beegan, Everett Junction, Mass.; Harvey Williams, Philadelphia; Willard E. Brown, W. C. Estabrook and Charles F. Edney, Boston; A. J. Mackler, F. E. Howe, F. M. McClintic, Edward F. Dougherty and David J. Ellington, New York; Frank T. McGauley, Lowell, Mass.

Judges.—George F. Shuman, Long Distance Telephone Company, Boston; J. H. Johnson, The Associated Press, Boston, and C. B. Wood, Western Union Telegraph Company, Philadelphia.

Entries in Press Receiving, 350 Words Straight Matter.—Herman F. Wood, Willard E. Brown, Frank J. Flynn, Charles F. Edney, A. F. Booth and W. C. Estabrook, Boston; Robert C. Rogers, Louisville, Ky.; J. A. Hosey, Lowell, Mass.; A. O. Howard, Newport, R. I.; Edward J. Coleman, Providence, R. I.; J. P. Gallagher, L. G. Thornton, P. J. Faulkner, F. M. McClintic, F. E. Howe, David J. Ellington, New York; Harvey Williams, Philadelphia; Warren E.; Stimson, John J. Bell, Boston; R. A. DeCoursey, Brockton, Mass.

Judges.—C. A. Richardson, manager Postal Telegraph-Cable Company, Boston; Allen Woodle, manager Western Union Telegraph Company, Boston, and Frederick N. Bassett, manager The Publishers' Press Association, Boston.

Entries in Phillips Code Receiving, 500 Words Press Matter.—F. M. McClintic, F. E. Howe, New York; Harvey Williams, Philadelphia; A. O. Howard, Newport, R. I.; J. A. Hosey, Lowell, Mass.; Edward J. Coleman, Providence, R. I.; Charles F. Edney, Frank J. Flynn, A. F. Booth, H. F. Wood and Willard E. Brown, Boston; R. A. DeCoursey, Brockton, Mass.

Judges.—Chester D. Rogers, chief operator, The Associated Press, Boston; George R. Allen, chief operator The Associated Press, New York; Frank B. Dumas, The Herald, Boston, Mass.

The following is the copy that was used in the Broker Class. The winner stopped at "36.6," as indicated in the concluding paragraph:

"Methinks the lady doth protest too much." That is the remark which a broker with Shakespearian recollections made when he viewed the activity in Baltimore & Ohio. He referred to the great pains taken by the management of that property to emphasize the excellent condition of the company. Perhaps the suspicions were unfounded, although the great volume of the trading at gradually lower prices indicated that some one was taking profits on the good news. The general opinion was that the old bull pool in Baltimore & Ohio was the heaviest seller of that stock. From the declaration of the dividend and even before it, they were liquidating. Their sales were considerably more than 50,000 shares. This was not the only pool liquidation in the market, as the American Locomotive pool tried to get rid of some of their stock on the dividend, but were not very successful.

New York, 12.20 P. M.—The curb market is firm: American Can, $7\frac{1}{8}$ @ $7\frac{3}{4}$; preferred, 58@58 $\frac{1}{2}$; Havana

Tobacco, $23\frac{1}{2}$ @25; preferred, 37@38 $\frac{1}{2}$; Bethlehem Steel, $27\frac{1}{2}$ @29 $\frac{1}{2}$; preferred, 86@89; Marine, $11\frac{3}{4}$ @11 $\frac{3}{4}$; preferred, $30\frac{1}{2}$ @31 $\frac{1}{2}$; Mackay, $74\frac{1}{2}$ @75; preferred, 73@73 $\frac{1}{2}$; Manhattan Transit, $3\frac{3}{4}$ @3 $\frac{1}{2}$; Boston Consolidated, $28\frac{1}{4}$ @28 $\frac{3}{4}$; Greene, $24\frac{3}{8}$ @25; Copper Securities, 34; Butte, 30 @ $30\frac{1}{4}$; United, $65\frac{1}{4}$ @65 $\frac{1}{2}$; Gold Hills, $1\frac{3}{8}$ @1 $\frac{1}{8}$; Nipissing, $5\frac{1}{2}$ @5 $\frac{5}{8}$; Utah, $26\frac{1}{2}$ @28 $\frac{1}{2}$; Giroux, $8\frac{1}{2}$ @9.

Buy 50 Mackay pfd 71 $\frac{5}{8}$.

Sell 50 Greene market.

Buy 500 Manhattan 141 $\frac{1}{2}$.

Sell 10 Rights 2 $\frac{1}{2}$.

Quote Steel pfd.

Buy 100 Northern Pacific 199 $\frac{7}{8}$, G. T. C.

Sell 50 People's Gas 89 $\frac{1}{2}$.

Buy 100 N. Y. C. 135 $\frac{1}{2}$.

Sell 50 Amalgamated 99 $\frac{7}{8}$, G. T. C.

Buy 100 Allouez 35.

Chicago.—Close: July wheat 83 $\frac{3}{4}$, up 1, September 83 $\frac{3}{8}$, up 1 $\frac{1}{8}$, December 84 $\frac{3}{4}$, up 1 $\frac{1}{4}$, May 87 $\frac{1}{4}$; July corn 51 $\frac{3}{4}$, up $\frac{1}{2}$, September 52 $\frac{1}{4}$, up $\frac{1}{2}$, December 50 $\frac{1}{2}$, up $\frac{1}{2}$, May 50 $\frac{1}{2}$ @ $\frac{5}{8}$; July pork, 17.50, up 50. September 16.80, up 15. January 15.10; July lard 8.77, off 3. September 8.02, off 3, October 8.95, January 8.20; July ribs 9.32, off 8, September 9.25, off 2, October 9.07@10. January 7.90; July oats 39 $\frac{3}{8}$, off $\frac{1}{4}$, September 36 $\frac{3}{8}$, up $\frac{1}{8}$, December 36 $\frac{3}{8}$, May 38 $\frac{3}{8}$.

New York.—Close: July wheat 90 $\frac{1}{2}$, up 1, September 89 $\frac{1}{8}$, up 1, December 90 $\frac{1}{2}$, up 1 $\frac{1}{8}$; July corn 58 $\frac{3}{8}$, up $\frac{3}{8}$, September 58 $\frac{3}{8}$, up $\frac{1}{8}$, December 57 $\frac{3}{8}$, up $\frac{1}{4}$.

Paine, Webber & Co.—Indian wheat exports last crop year ending April 1 were 36,6

Three hundred and fifty words, sent in Press Class A:

There seems to be little question that the newly-organized Pennsylvania state constabulary deserves a large share of the credit for the maintenance of unusual order in the coal regions during the period of strike agitation while the miners were idle. There were two or three infractions of public order, one of them rather serious, but on the whole the coal regions were much quieter than they ever were before under strike conditions. Altogether the constabulary did service that has attracted the attention of other states and set them to considering the advisability of organizing a similar force.

Pennsylvania has a special problem to deal with because of its large colonies of ignorant and undisciplined foreigners employed in and about the anthracite mines. These are the men who make most of the trouble that always has accompanied a great anthracite strike. To aid the county officials in dealing with this element, Pennsylvania had, until recently, two forces—the coal and iron police and the national guard. Neither force was especially well adapted to this purpose. The coal and iron police was really a force in the employ of corporations that had property to protect. Their character as a state force was rather mythical. Everyone knew that the only lawlessness they were expected to repress was lawlessness directed against the property and interests of the mine owners. They were regarded by the wage workers not as state officials charged with the duty of upholding the law, but as private enemies of labor. There was some justice in this view. The arrangement involved a special alliance between certain private interests and the state that was vicious in principle. The coal and iron police really brought about more harm than good, and its presence in a disturbed section usually did more to provoke riot than to quell it.

The national guard was effective in maintaining order when it was on the scene, but its organization is such that it cannot and ought not to be called out except in very serious emergencies or kept on duty for any extended period. It is altogether

Three hundred and fifty words received in Press Class B, transmitted by George W. Conkling, of New York:

In his admirable and thoroughly sane address at Smith College on "Our Peace Problem" Congressman McCall indicated the great influence the United States can exercise upon the development of international law, which is only another name for international morals. But here, as elsewhere, example must count for more than precept. Acts are of more consequence than preaching. Certain things we must be careful not to do if the nation's influence abroad is to be of the highest and strongest character.

Mr. McCall illustrated the things to be avoided by courageously criticising the President's seizure of the Isthmus of Panama from Colombia. He has had over three years to reflect upon that performance and the justification that was offered to give it a veneer of morality. Having reviewed the facts, the Congressman presented this judgment with the utmost deliberation:—

The method of our acquisition of rights in the canal zone has been justified as an exercise of "international eminent domain." But how is it possible to have any right of eminent domain by one sovereign over another? Obviously, if one nation can exercise eminent domain over another, the latter cannot be sovereign. Where is the international court to award damages? The theory is subversive of that first principle of public law, the political equality of sovereign nations. It is the doctrine of pure force. A weak nation has something that a strong one wants, and the latter has only to set itself up as a trustee of civilization and help itself. If you are sailing the seas on a ship bristling with cannon and meet an unarmed vessel laden with bullion you might relieve the latter of its cargo with a fine discourse about Christianity and civilization to justify your action, but, according to the precedents, you would hardly be justified in calling what you are doing "eminent domain." That method of helping one's self upon the high seas has usually been stigmatized by a less euphemistic expression. Our country can stand for no such doctrine. It would be the falsest note ever struck in her history. Instead of ranging herself

Copy received in Press Class C. Phillips code, transmitted by George W. Conkling, of New York:

There can be no honest survey of the situation in San Francisco that excludes a certain element of discouragement among those whose hopes may have been unduly high, but whose disappointment is none the less deep. A reaction from the excitement of the fire itself and from the buoyancy induced by a world-wide sympathy was inevitable. The constant spectacle of gray and silent ruins is infinitely more depressing than actual and lurid destruction. The daily life amid ashes and desolation must have its influence even upon the most hopeful, and the contrast between the past and the present must for a time be intensified as memory gets leisure to assert itself. These things are of course, sentiment, but we are fortunate to be still largely governed by sentiment even though it may bring its occasional discouragement.

But added to all other causes for depression there is the all-engrossing insurance situation. While the city was still burning, the insurance money had already become in most minds the promise of reconstruction. Although those in a position to know something of the facts were inclined to shake their heads doubtfully, it never occurred to the ordinary householder to doubt that his claims would be met, that he would receive what he had paid for, and that he would at least have some funds in hand with which to rebuild his home. Only those upon the spot can appreciate what the delay means to those who have nothing in the world but claims that are ignored, and who are therefore compelled to stand idle and helpless and even dependent. They cannot leave the city for fear of prejudice to their chances; in many cases they have families for whom they could provide if they had an opportunity, and it is small wonder that the outlook to them should seem to be a gloomy one. The large concerns can of course, afford to wait, although to their grave detriment, but it is the small homes that form the

backbone of the city's life, and delay here is peculiarly grave. Delay means disintegration; it means the dissolution of civic habits and organization, and it is to be hoped that the resentment that is now being felt against the delinquent insurance companies will solidify into some coercive measure.

There are of course, many compensating features and large ones. The situation might easily be many times worse. The refugee camps are rapidly dwindling in size, and the drain upon charity has been relieved. The health of the people is everywhere of the best in spite of reasonable fears to the contrary. The moral effects of a common misfortune, the volume of fraternity that lightens all burdens, are immeasurably gratifying and are in themselves an assurance of good times coming. Even the insurance problem will be solved and its worst features will tend to be smoothed away. House rents are moderate and accommodation can be found by those who need it. Work has been delayed, but it has

SKETCH OF MR. ELLINGTON, CHIEF WINNER OF THE TOURNAMENT.

David Jaquith Ellington, who won such signal success at the International Telegraph Tournament at Boston, June 29, was born at Greenwood, Miss., September 29, 1884. Learning telegraphy his first employment as an operator was for the Postal Telegraph-Cable Company at Memphis, Tenn., in 1899. In 1901 he was



DAVID JAQUITH ELLINGTON.
Winner of the World's Championship.

transferred to St. Louis, where he was soon put on a bonus wire, at one time handling 733 messages in nine hours, taking them as they came.

During the Galveston flood he was sent to Little Rock with other Postal operators to relieve the congestion, wires being down between Memphis and Little Rock. Here he handled 1,183 messages in eighteen hours without rest. Later he worked for the Postal in Chicago, St. Louis and Dallas, after which he filled short engagements with The Associated Press and brokers in Memphis, Tenn., coming to New York in 1904. Here he was employed for a short time with The Associated Press and then went with

the banking house of T. A. McIntyre and Company, where he remained for a year. During the latter part of 1905 he made another southern trip, after which he returned to Messrs. McIntyre and Company in New York for several months. Recently he severed his connection with that firm and returned to his old occupation of bonus work with the Postal Telegraph-Cable Company, New York, where he is located at present. His first tournament experience was at Madison Square Garden, in December, 1904, where he took second prize in receiving fifty messages.

The following are the twenty-five messages used in the team match:

A1 10
BROOKLINE, MASS., June 29, 1906.

MR. J. A. BROWN,
120 Franklin St.,
Bradford, Mass.

Please meet me at South Station arrival ten o'clock train.

J. O. MARSH.

A2 6
SALEM, O., June 29, 1906.

WM. A. SMITH,
Salem, Mass.

Come on to New York at once.

JOHN.

A3 8 Collect
LOWELL, MASS., June 29, 1906.

BROWN & JONES,
Lynn, Mass.

Ship as per letter of May first.

SMITH BROS.

A4 7
MINNEAPOLIS, MINN., June 29, 1906.

JONES & KIDDER,
Wall St.,
Saco, Me.

Sell one hundred Utah at the market.

HOWARD & WATSON.

A5 7
BERGEN, N. J., June 29, 1906.

J. B. COOLIDGE,
Franklin, Mass.

Ship cotton goods ordered yesterday by express.

HAMLIN & THOMPSON.

A6 10
WINSLOWS, MD., June 28, 1906.

JONES & McLOUD,
Portland, Me.

Ship one barrel herring, one of cod and three mixed.

FULLER, BROWN & CO.

A7 11 Collect
PEORIA, ILL., June 29, 1906.

HALLGARTEN & Co.,
Cincinnati, O.

When may we expect balance of goods ordered May first.

JONES & McCORMICK.

A8 9
WESTERLY, R. I., June 29, 1906.

H. M. ROGERS & Co.,
Summit, Mass.

Send one barrel oysters one of clams three mackerel.

McMILLAN & Co.

A9 9
OMAHA, NEB., June 29, 1906.

H. B. CLAPLIN & Co.,
Palmer, N. Y.

We ship you today five thousand yards pattern B.

SMITH & Co.

A10 5
NEW ORLEANS, LA., June 29, 1906.

J. W. HOBBS,
31 Worth St.,
Bradford, Pa.

Will arrive tonight five o'clock.

WILLIAM.

A11 7 Collect
PORTLAND, MICH., June 29, 1906.

MAX FRIEDMAN,
37 Broadway,
Norwich, Conn.

Goods received and check mailed today.

EARLE BROS.

A12 9
WILMINGTON, DEL., June 29, 1906.

PENNA. RAILROAD Co.,
Jersey City, N. J.

Reserve section in pullman for me tonight for Chicago.

J. W. PHILLIPS.

A13 5
DOVER, DEL., June 29, 1906.

PARKER HOUSE,
Bath, Me.

Reserve room for me tonight.

WM. SIMPSON.

A14 6
ATLANTIC CITY, N. J., June 29, 1906.

W. A. MEAD,
Middletown, N. J.

Many happy returns of the day.

S. A. MEAD.

A15 9
CINCINNATI, O., June 29, 1906.

JOHN A. TAYLOR,
Trenton, N. J.

Ship five barrels pork today will send check tonight.

GIBBONS & HAMMOND.

A16 6 collect
MILWAUKEE, WIS., June 29, 1906.

JONES & SMITH,
New Haven, Conn.

Dynamo sent by freight today.

WILLIAMS & BELL.

A17 7
HARTFORD, CONN., June 29, 1906.

COOPER, HEWITT & Co.,
Trenton, N. J.

Ship wire by freight soon as possible.

JAMES BROWN & Co.

A18 9
LANCASTER, PA., June 29, 1906.

CARTER & Co.,
White St.,
Lynn, Mass.

Shoes sent today balance of leather goes forward tomorrow.

CANFIELD MFG. CO.

A19 5
BREWSTERS, N. Y., June 29, 1906.

UNITED STATES MFG. Co.,
New Britain, Conn.

Tubing received but no fittings.

JONES & McLAUGHLIN.

- A20 8
 BANGOR, ME., June 29, 1906.
 MAX FREDERICKS,
 191 Canal St.,
 New London, Conn.
 Ship bottled goods by boat check follows today.
 ARMSTRONG BOTTLING CO.
- A21 7
 NEW ORLEANS, LA., June 29, 1906.
 BULLARD & BETTS,
 Cotton Exchange,
 Memphis, Tenn.
 Please quote cotton hourly until further notice.
 HANSON & BROWN.
- A22, 5
 TAUNTON, MASS., June 29, 1906.
 AMERICAN JUTE MILLS,
 Jewett City, Conn.
 Ship five bales jute today.
 CONSOLIDATED MFG. CO.
- A23 10 collect.
 INDIANAPOLIS, MINN., June 29, 1906.
 HENDERSON BROS.,
 Cleveland, O.
 Five bales green muslin went forward today fast freight.
 AMERICAN COTTON CO.
- A24 10
 FRAMINGHAM, MASS., June 29, 1906.
 MRS. J. B. HOWELL,
 275 Fourth Ave.,
 Knoxville, Tenn.
 Funeral Monday at nine A.M. carriages arranged for at depot.
 WM. B. HOWELL.
- A25 7
 SAVANNAH, GA., June 29, 1906.
 J. W. SHATTUCK,
 Westboro, Mass.
 Will reach hotel Worthy at noon tomorrow.
 F. W. GILES.

The Sandwich Telegraphone.

The Sandwich Electric Company, of Sandwich, Ill., are manufacturers of the Sandwich Telegraphones. By means of the telegraphone a talking circuit can be derived from an ordinary telegraph wire without interfering with the working of the latter. The signaling device operates independently of the Morse, and in no way interferes with its operation; the telegraphone will operate upon a quadruplex with no interference.

Figure 1 represents the station telegraphone. This instrument will give commercial service over an iron wire 100 miles in length, on a copper wire double the distance. Four cells of an ordinary dry battery are required to operate both the signal and talking circuit. It will operate upon a quadruplex or duplex circuit without interference.

Figure 2 represents the telegraphone train set. This instrument is made compact and is so mechanically constructed that it will withstand constant jarring, to which it is subjected. It is mounted on soft rubber supports, which keeps the instruments free from vibration to a considerable extent. The instrument is designed to be fastened upon the wall of a caboose or baggage

car, and is supplied with a jointed pole and 100 feet of flexible wire, making it possible to connect the instrument with the telegraph wire by



FIGURE 1.—THE STATION TELEGRAPHONE.

simply hooking the jointed pole over the wire. Then, by simply pressing the button at the side of the instrument, the train crew can be placed

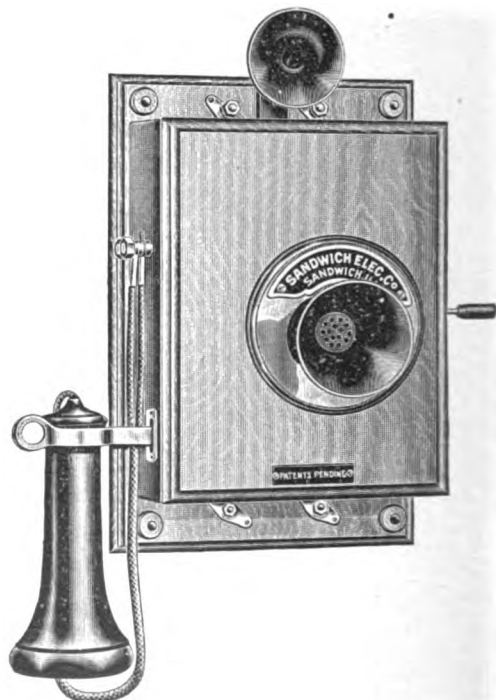


FIGURE 2.—TELEGRAPHONE TRAIN SET.

in communication with the despatcher or the nearest station equipped with a station set telegraphone.

At Last the True Discoverer of the Telegraph Stands Revealed.

The accepted belief has been very general, covering a long period of years, that the invention of the electric telegraph was very properly accredited to Prof. S. F. B. Morse. To the latter the world has rendered willing homage, and since his death his name has gone down in history as the genuine inventor aforesaid, save, indeed, when occasionally some half-hearted claimant would take a modest shy at the Pretender in the hope possibly of detaching a bit of the honor which has had a persistent kind of way of sticking closely to the generally accredited discoverer. But now we are calmly told to what an extent we have been humbugged, and that, too, by no less an impostor than Morse himself. A venerable gentlemen, almost a centenarian, for he is now in his ninety-third year, a resident of Louisville, Ky., where, we are informed, he is the dean of the bar of that city, and consequently a man of extreme veracity, rises to explain, once for all, after waiting a long lapse of years, the exact origin of the telegraph. It is a pity that we should be compelled to loosen our hold on old-time and cherished beliefs. Yet such is the case, for Junius Lynch Clemmons, that is the name, realizing at best the numbering of his days, and with evident desire that the world may at last learn the exact truth respecting the telegraph, withdraws the veil that has so long hidden his name and fame and reveals himself as the only simon pure inventor thereof. His statement is set forth in the following letter:

You want to know about my connection with the Morse telegraph. I can, in this letter, answer you in a general way. Indeed, the science of electricity has so expanded, and its wonders so developed in these modern days as to obliterate the humble origin of its early history, 70 years ago.

Franklin, by means of his kite, had proven the identity of the electricity of the thunder-cloud with the electricity produced by friction, or the oxidation of metals. Volta, an Italian, had constructed the Voltaic pile, and Galvani had discovered the positive and negative poles, but as late as 1832 no scientist had ever dreamed of the true nature and wonderful powers of that great element of nature.

In 1832 I was a student at Randolph Macon College, Virginia. In attending the lectures of Prof. London C. Garland on chemistry I became very much interested in the science of electricity, or of what little of it was known at that early day.

The scientific world was speculating on the question as to how far an electric current could be sent over a wire. The experiments were being made on a coiled wire, and the greatest distance was 27 miles, made by Dr. Jackson, of Boston. I contended that if the wire was perfectly insulated and supported by a line of upright poles, its distance would be without limit, and to illustrate my idea, I drew, with a lead pencil, a diagram around my room.

Poles and wire alone, however, could not convey intelligence. All they could tell was that someone at the other end had connected the wire with the battery. There was but a single impulse, and I and all the rest were confronted with the problem how to make it talk, and for awhile both Europe and America were at work on that problem.

I firmly believe I was the first to solve that problem. I said, receive the current on a moving surface, and the problem was solved. Get your moving surface from an independent clockwork. To illustrate: Saturate a sheet of white paper in a solution of nitrate of silver and when dry wrap it around a wooden roller and connect it with a common clock and bring it near the end of the wire while still in motion. Let the man at the other end of the wire close the circuit for an instant and it will be seen the electric current has made a black dot on the moving paper. Then let the man at the battery end of the wire connect again and hold the connection for a little while and it will be seen that the current has made a mark, longer or shorter, according to the time of the connection. You will then have two elements, a dot and a dash, out of which a telegraphic alphabet can be constructed by which any word in any language can be spelled. This only for illustration.

I was laughed at and jeered by everybody for my crazy prophecies. So I concluded to submit my project to some electrician, and having learned that one Page of Washington was one of national note, I concluded to consult him as to his opinion of my suggestion. I accordingly sent him a diagram of my proposed apparatus with a statement of my views, and requested him to let me know what he thought of it. He never gave me any answer.

Being young and somewhat diffident, I took it for granted there was nothing in it, and so I dropped the matter altogether and devoted myself exclusively to my college studies.

Twelve years later, when I had graduated from Randolph Macon, and also from Transylvania University, and was in full practice of the law at Lexington, N. C., on opening my mail one morning I picked up the Washington Globe, and the first thing that caught my eye was a statement that Morse & Page, partners, had asked Congress to grant them \$15,000 to enable them to construct a line of telegraph from Washington to Baltimore.

I saw in a moment that Page had betrayed me, and immediately wrote an open letter to the Globe, charging him with having done so. He was thereby compelled to answer. He did so, and publicly admitted that he received my letter and diagram, but said there was nothing in my project and threw it aside. I do not know how long he and Morse continued partners.

I had the Globe containing Page's letter of admission, and a number of letters from fellow students verifying these statements, but while I was in the South during the Civil War my residence was occupied by Federal officers and all my papers were used for kindling fires.

I wish to do justice to Mr. Morse by saying that he did more than any other one man in the world in putting the idea of electric telegraph into practical operation. My connection was in theory only. His work was practical. He was no electrician, but was a first-class business man, and by great labor, expense and unceasing perseverance made the idea a success.

He was a portrait painter by trade, and was staying around Washington trying to get a contract to paint a national picture to be put in the rotunda of the Capitol. He was on intimate terms with Page, who was a commissioner of patents and an electrician of national reputation. Page, being a commissioner of patents, was forbidden by law from taking out a patent for himself, and in 1837 issued one to his friend and partner, Morse. I never knew either of them personally.

The testimony of progressive operators is that **TELEGRAPH AGE** is so thoroughly comprehensive in character as to make it absolutely indispensable to those who would keep informed. Its technical articles are of high practical value. Write for a free sample copy.

TELEGRAPH AGE will furnish operators with just the kind of practical information they require.

Some Points Involved in the Problem of Increasing Railroad Telegraph Facilities.*

BY W. W. RYDER, CHICAGO.
SUPERINTENDENT OF TELEGRAPH, CHICAGO, BURLINGTON
AND QUINCY RAILROAD.

The telegraph department of a railroad is constantly confronted with the problem of properly taking care of a rapidly increasing volume of business with a minimum of expense.

It is generally recognized that economy of operation consists in closely watching the little things, and eternal vigilance is to-day as much the key to success as it ever was.

One of the ways in which money is frequently wasted is in the unnecessary relaying of telegrams. A little thought given to the making of through circuits would lessen this item of expense and would accordingly greatly reduce the time consumed in getting telegraph business to destination. At the same time the fact must be recognized that going to the extreme in attempting to save relaying will sometimes be detrimental to good service by reason of the difficulties involved in getting rid of business to a large number of offices on a way wire. For instance, it is often more economical to send to the division headquarters business for the way offices on that division, rather than attempt to work with them direct, even though the former does involve a relay.

There is not a member of this association who is not more or less familiar with the theory and practice of the quadruplex, yet few seem to realize how extremely flexible an arrangement of such circuits may be made, and what returns may be secured from a small expenditure in this direction. With a proper combination of quadruplex sets, with loopjacks and repeaters, not only is it possible to do away with a great deal of relaying of business, thereby lessening expenses and saving time consumed, but in addition facilities are provided that, rightly handled, can often in an emergency be made to do wonders in the way of quickly making up roundabout routes when the regular route is interrupted.

The thought still seems to be somewhat prevalent that the quadruplex is so complicated that it is beyond the capabilities of the average railroad telegrapher to properly handle it. While this may be true so far as the ordinary way operator is concerned, it is not true of the average relay office man, particularly if he has come to the realization that a knowledge of the quadruplex will bring him a little additional salary; and it is difficult to find a place where a small expenditure will bring greater results than in this particular.

There has been a great deal said recently about

the quadruplex being less efficient than it was formerly, the principle reason given being the inductive effects due to the multiplication of these circuits. While this condition does undoubtedly exist on the long circuits maintained by the telegraph companies, the effect on the railroad circuits, being ordinarily much shorter, is far less noticeable, and I believe with proper supervision the quadruplex is still as valuable to the railroad as it ever was.

There has developed recently, however, a serious problem through the paralleling of portions of some of the roads with the high-tension single-phase trolley lines, causing both telegraph and telephone service to be greatly interfered with, but I am a firm believer in Yankee ingenuity and am sure some remedy for this trouble will soon be found.

Another method of increasing facilities is in the use of the wires for composite telegraphy and telephony. A great deal has been said about this idea in the past two or three years, and some of the statements have been so greatly exaggerated as to make it difficult to convince those unfamiliar with the details of composite work that existing local conditions play an important part in the successful working out of this method of transmission, and that there are some other requirements, physical and otherwise, besides the glowing statement of the selling agent to make results even partially successful.

In figuring upon compositing a line, as in any other work, one must realize that something cannot be had for nothing. Every time you attempt to add the telephone to the telegraph, or vice versa, you must realize that you do so at the loss of a certain percentage of efficiency of the original service. The first thing that should be considered is whether the efficiency of this original service is sufficiently high to allow this drop without serious interference. For instance, let us take as an example a long hard-working telegraph circuit with an insufficient current (around twenty milli-amperes—and such circuits are still all too common), it is worse than useless to expect to get anything like satisfactory composite results on such a circuit. Again, other local conditions, such as a large number of instruments on a wire, inductance, leakage and crossfire may be sufficiently detrimental as to make successful compositing impossible.

The one wire or grounded composite has not yielded good results, the telephone transmission under even the best conditions being far below what is generally recognized as satisfactory service. By satisfactory service I mean commercially good telephone transmission and clean, clear-cut Morse. The term "commercially good telephone transmission" is apparently understood differently by different people as is evidenced by an experience that I had about a year ago.

At the Chattanooga convention last year while discussing the possibilities of the single wire composite, I was assured by one of our members that

* Paper read at the convention of the Railway Telegraph Superintendents, Denver, Colo., June 20-21.

it was possible to get absolutely commercial service over a quadruplex telegraph circuit. This statement was made so positively and was so utterly at variance with my own personal experience that I went home considerably chagrined. As soon as possible I delegated a couple of my men to look into the matter, and I can best explain the situation by quoting from their report:

"When we were still some distance from the office in which was located the composite set, we heard someone shouting at the top of his voice, and upon entering the building found this person using the composite line we were sent to investigate. The gentleman's replies to our queries as to the general service would scarcely bear repeating here."

In the case of short circuits, say twenty-five miles or less, it would be more economical to string a special wire and equip it with ordinary telephones, thereby securing better transmission and incidentally saving the difference in cost of rental and maintenance of two sets of Bell standard type of railway composite apparatus, as compared with two ordinary telephones or an amount equal to six per cent. on the original cost of this wire. This being the case with only two telephones on the circuit, of course, a larger number would make the difference relatively greater. You would also gain through this procedure by reason of the greater simplicity of the ordinary telephones and the fact of there being no possible interference with the telegraph through punctured condensers or otherwise. Of course, the apparatus embodying the howler type of signaling is not so expensive to maintain, and consequently the mentioned figure of twenty-five miles would have to be reduced somewhat, perhaps half, but the other factors remain practically the same.

Local conditions must also be studied as regards the metallic circuit composite proposition, although the possibilities are much greater here than with the grounded circuit, particularly as to quality of service.

We are now able, under good conditions, to get satisfactory service from each of three possible combinations of composited metallic circuits: First, where either or both wires are worked as simple Morse circuits; second, where both wires are brought together through a split retardation coil, and used as simple Morse, duplex or quadruplexed. When quadded, however, we are at present unable to get more than a three-cornered quad for a distance above one hundred and twenty miles. The added capacity given the line by reason of the introduction of the composite apparatus exaggerates the "bug" due to the interval of no current to the line through the reversal of the distant pole changer and this on the longer line on which I have experimented has so far made it impossible to get a full four-cornered quad from either or both wires. However, I believe this difficulty is not all caused by the greater length of the line, feel-

ing that part of it may be due to the fact that at one end of the longer line we have gravity battery, while both ends of the line successfully quadded are supplied with current from dynamos.

Another use of the telephone that has been mentioned before, but is not, I believe, thoroughly appreciated by the railroad managements, is that in the connection of blind sidings with near-by telegraph stations. Such action, it is found, does away entirely with the unsatisfactory conditions of blind siding operation from a train movement standpoint. Without such means of communication the making of meeting points for opposing trains at blind sidings is always attended with the possibility of one train being tied up there indefinitely through failure of the other train to carry out the provisions of the order. The telephone, however, enables the dispatcher to quickly get in touch with the train at the blind siding through the operator at the other end of the telephone line, and necessary orders changing movement are thus readily transmitted. Care must, of course, be exercised in handling orders in this way, but it is not more vital than in the handling of them by telegraph.

Underground Telegraph Wires in England.

The British postmaster-general has written a letter to the Association of Chambers of Commerce, which memorialized him in favor of laying all trunk lines underground to obviate delays by storms, to the following effect:

In reply I am able to state that the underground line between London and Glasgow has now been completed. The spur line to Manchester has been continued through Bradford to Leeds. In the south an underground line has been laid from London eastward as far as Chatham and westward as far as Slough, and thence a pipe, but not yet a cable, as far as Reading. During the present year the postmaster-general hopes to extend this pipe line to Bristol and to provide a cable as far as Chippenham. The postmaster-general trusts that the Chambers of Commerce will see that such a programme evidences a desire to extend the underground system of telegraphs as rapidly as can reasonably be made.

It is proposed to extend the underground wires to the landing places of important Atlantic and Mediterranean cables throughout Great Britain.

Signaling by Means of a Huge Shutter.

An officer of the artillery branch of the United States army, has just completed a device for visual signaling. He has constructed a huge shutter, the slats of which are a foot wide and so painted that when operated by a lever the colors will be shown to a distant observer, and by this means simple signals can be given. Of course, this is not as satisfactory as wireless telegraphy, but it was regarded as worth trying, and the War Department has allotted \$2,000 for experiments with the device. These tests will be conducted in Boston harbor. If the signal corps people succeed in getting a cheap wireless outfit, there will be no need of the artillery officer's shutter.

An Electrolytic Wireless Receiver.

BY D. L. BEARDSLEY, IN THE SCIENTIFIC AMERICAN.

Most Hertzian wave detectors are more or less complicated, and few are very satisfactory. The writer has experimented with many kinds, and has at last evolved one which has given the utmost satisfaction, receiving the most distant messages very clearly and sharply. This detector is electrolytic in its action, and it consists of a cell in which a zinc anode and a platinum cathode are used with an electrolyte of dilute sulphuric acid. An important advantage of this receiver is the fact that it requires no battery, as it is a battery in itself.

The following are the instructions for making it: Prepare a base about three inches square of hardwood. At one side, parallel to the edge, erect a standard of hardwood, one-half inch thick, two inches wide at the bottom, tapered to one and one-half inches at the top, and three inches high. Cut out two pieces of brass, one and three-quarter inches long, one-half inch wide and one-sixteenth of an inch thick. One of these pieces, which will serve to support the anode, should have a three-sixteenths-inch hole drilled at one end, and the other strip, which is to support the cathode, should be drilled and tapped for an 8x32 machine screw. These strips of brass are to be fastened to the top of the standard one-half inch apart by woodscrew binding posts, and should be provided with one-quarter-inch holes to receive the threaded shanks of the binding posts. Cut off a two and one-half-inch length of common battery zinc, and thoroughly amalgamate it. This may then be fastened to the untapped brass strip with an 8x32 machine screw, threaded into the end of the zinc. The depending end of the zinc should enter a small glass jar of about one and one-half inches diameter and two inches high. For holding the cathode make an 8x32 machine screw of brass one and one-half inches long, with a knurled head. File down the end to a diameter of 3-32 inch, and split it with a fine jeweler's saw. Take a very fine piece of platinum wire (if Wollaston wire can be obtained so much the better, but very fine platinum wire will do) about three-quarters of an inch long, and place one end in the fine saw cut, after which close the kerf onto the wire by means of a vise. The screw may now be threaded into the tapped hole of the cathode-supporting strip, and screwed in far enough to bring the platinum wire within the cup. The cup should be filled with a ten per cent. solution of sulphuric acid. In making the electrical connections the aerial should be connected to the cathode supporting strip, the other strip being connected to the ground, and the two terminals of a telephone receiver being connected respectively to the two strips. Place the telephone to the ear, and feed the cathode down by turning the screw until a click is heard. This will indicate the position in which the detector will work to the best advantage.

Mr. Rosewater and the International Postal Congress.

Edward Rosewater, the well known old time telegrapher, proprietor of the Omaha Bee, has returned from Europe whither he went as American delegate to the International Postal Congress in Rome. He was able to give valuable service for two reasons: he took in the Postal Congress in Washington in 1897, and as he speaks French fluently, he was able to do business without an interpreter.

Mr. Rosewater had this to say:

"This congress has demonstrated again, that the United States is wofully behind the other nations in postal matters. We have here practically no parcels post, our money order system is not nearly so complete as that of some European nations, and we have nothing here which corresponds with the declared-value service in operation abroad.

"There a parcel can be posted and insured just as we insure a package here for a certain value with the express companies. The government is responsible for the package, and this and the other features of the parcels post are very desirable adjuncts of the postal service.

"We have given over that part of the business here entirely to the express companies, when, as a matter of fact, it should be a part of our postal system.

"Of great importance was the agreement to issue in the country from which a letter is sent a payment coupon which will be exchangeable at the post office to which it is sent for a stamp. As each country retains all the money it receives for postage paid within its borders, these coupons would be kept and sent at the end of each year to the clearing house in Berne, where any credit difference will be allowed to the country to which it is due.

"Heretofore, if a person wished to prepay an answer to a letter sent abroad, he was required to purchase a foreign stamp, never an easy matter, or put the prepayment money in an envelope.

"After October 1, 1907, when the new postal treaty takes effect, all he need to do is to put a prepayment coupon in the letter, which the recipient will take to his post office and receive therefor a stamp."

The Wellman Polar Expedition.

Walter Wellman, chief of the Chicago Record-Herald's arctic expedition, is in Norway actively preparing for his journey by balloon of 600 miles from Spitzbergen to the North Pole, and return. In order to do this the explorer has had constructed at a cost of \$75,000 an aerial automobile supported by a huge gas balloon and propelled by a gasoline engine. It is expected that the altitude of the airship will be maintained at a height of about 300 feet above the earth's surface. During his progress toward the North Pole, Mr. Wellman expects to report progress daily by wireless telegraphy.

Cleveland Western Union Office in the Late Sixties and Early Seventies.

BY J. W. HAYES.

First impressions, especially those made on an impressionable boy, are seldom eradicated. So the faces, forms and names of those I met with in my first introduction to telegraphic life stand out in bold relief, withstanding the ravages of time.

It was in the early seventies that through the kindness of the late Louis A. Somers, of Cleveland, O., I was appointed to a position as messenger in his office at the "Dock" in that city. Mr. Somers was manager and Albert J. Desson was his assistant. Never was a boy launched into the telegraphic profession under better men or brighter auspices. We meet such men as L. A. Somers but once during a lifetime, and their impression and influence for good is lasting. A spirit of true Christianity pervaded Mr. Somers, and he took great interest in reading and expounding the scriptures. He was not erratic, but lived up to his highest conceptions of his belief, and he was a good man. As a telegrapher, Mr. Somers excelled, and he is the only man I ever knew who could receive from two instruments at the same time. This feat I have seen him accomplish without apparent effort. He had a world's record for fast receiving and held a personal letter from Prof. Morse, of which he was justly proud.

Albert J. Desson was one of those quiet, unostentatious men, that go through life so easily, taking things cool, accomplishing much, but with such an utter disregard for pomp or show that one could hardly realize how much was being executed. He was always ready to help along the struggling youth, and to him I owe my first teachings in mastering the Morse alphabet. In the room adjoining our office at the dock was the Atlantic and Pacific Telegraph office, with Richard D. Babbitt as manager, and John B. Taltavall, now the publisher of TELEGRAPH AGE, messenger and batteryman. While Mr. Babbitt could not telegraph with both hands at the same time he could do enough execution with one to make up for any alleged deficiency that way. Mr. Babbitt died of yellow fever at New Orleans in the epidemic of 1878. He had removed to that city but a few years previously, and was held in high esteem by a wide circle of acquaintances.

John D. Rockefeller had a modest office in the Empire block adjacent to the dock office, and Mr. Taltavall and the writer wore a beaten path between the two places in their official capacity as messengers. Mr. Rockefeller did not cut much of a figure in those days. He offered me a position as messenger in his office, but as the compensation was \$5 less per month than the Western Union was paying, the offer was declined. What the result might have been had his munificent tender been accepted is a matter

of conjecture. I think the same inducements were held out to young Taltavall, who at the time also declined, but who in 1869 or 1870 entered the service of the Western Union Telegraph Company at the Dock office, where he soon mastered the art of telegraphy under Mr. Somers and Mr. Desson. On January 1, 1871, he did, however, enter the employ of Mr. Rockefeller, upon the recommendation of Mr. Somers, and thus probably became the first operator in the service of the Standard Oil Company, then in process of organization.

A. M. Vanduzer, who is again a resident of Cleveland, was manager of the main office, but he resigned shortly after I entered the service, and was succeeded by Herbert L. Melton, who had been supply agent under William Hunter. Mr. Melton was an ideal manager, popular with the public and loved and respected by his men. The gentleman that took the keenest interest in the business office was Nelson A. Buell. Under all trying conditions, Mr. Buell was always the same patient, kind and accommodating gentleman, and all the boys who served under him as messengers delight in speaking in his praise. Nicholas Kerver was delivery clerk. He had risen from the messenger ranks, appreciated conditions and we all liked him. Charles H. Lapp was bookkeeper. He was a handsome fellow, a man of good business instincts, with a promise of a bright future before him.

The four gentlemen just mentioned comprised the office force down stairs. Mr. Melton, after filling various honorable positions in Cleveland, is now engaged in the manufacturing business at that point. Nelson A. Buell was manager for over five years, but finding the duties too onerous asked to be returned to his old position, which he still holds. Nicholas Kerver and Charles H. Lapp are now both dead.

The operators in those days included C. F. Stumm, chief operator; V. D. Green, night chief; George H. Wadsworth, assistant day chief; O. A. Gurley, Marsh Green, E. C. Jenney, George A. Lied, C. J. Wilhelm, T. R. Taltavall, S. B. Derrickson, E. M. Boynton, W. A. Manning, D. C. Schull, E. T. Tindall, George T. Lowe, George W. Hinman, James P. McKinstry, W. A. Williams, J. W. Hunter, W. H. Sterling, N. C. Griswold, George D. Phillips, G. W. Jones, G. W. Patterson, F. A. Stumm, J. M. McNamara, and others.

Mr. C. F. Stumm took a fatherly interest in the boys and was always ready by good counsel and advice to put them on the right road to become good men. "Ducomb" Green excelled at the key and was a famous hunter and fisherman. If you want to know a man's true self, take him a-fishing with you. I have been fishing with Mr. Green and he stood the crucial test. One of the noblest of fellows was William A. Manning. With ability that would have fitted him to fill a much higher office, either in the service or out of it, Mr. Manning plodded along in an easy

way, doing all the good he could. George Wadsworth afterwards succeeded Mr. Stumm as chief operator. He was one of the first men in the Cleveland office to take up the study of electricity in a systematic manner, and through the knowledge he gathered he speedily gained preferment with the company.

O. A. Gurley, too, followed the same line of study, and was rewarded by merited advancement. John W. Hunter went to Sandusky as manager, where he remained a number of years, returning to Cleveland but recently.

Most of the people I have mentioned have passed away. So far as I know, these include C. F. Stumm, G. H. Wadsworth, O. A. Gurley, E. C. Stockwell, G. W. Patterson, G. D. Phillips, D. C. Schull and George T. Lowe.

There is one man whom I must not forget to mention, and that was Thomas Callahan, the batteryman. He came to the service while yet in his teens, and after serving faithfully and well for forty years and more died a short time since. He hardly missed a day during this long period. He was ever ready with a bit of Irish wit, and nobody was more honest and true blue than Thomas Callahan.

Gen. Anson Stager was general superintendent at this time, and I remember him well. I still possess a fifty-cent gold piece that the General gave me for a Christmas present. These coins were very rare, and to make sure of keeping it, I had it converted into a scarf pin, which remains still in the family.

I always feel like taking off my hat when I mention the name of Edward P. Wright, the superintendent. He was certainly one of God's noblemen. Always kind and just, he did all that was in his power to lessen the burdens and improve the conditions of all of his subordinates, and never did anyone come away from a hearing with Mr. Wright without having any alleged grievance adjusted. Mr. Wright still lives and enjoys good health, and his declining years are full of peace. Charles W. Douglass was Mr. Wright's chief clerk, a most excellent and competent man. He was assisted by C. H. Cadmus, with Walter Hinman, a brother of George, as office boy.

Up the street a short distance was located the office of the Atlantic and Pacific Telegraph Company, where Frank A. Beach was manager, having succeeded Charles W. Dean; and W. H. Spencer chief operator. W. D. Linton, E. B. Beecher, Samuel B. Roberts, C. H. Speed, and Edward Schermerhorn were some of the operators. Messrs. Beach, Roberts and Spencer have been called to their fathers; Beecher and Linton are on the Pacific Coast doing well.

Mr. H. W. Stager was despatcher at the Lake Shore depot. His ever present companion was A. A. Briggs, one of the most genial of men, and the twain were popular with their employees, who to this day delight in relating reminiscences of the two gentlemen.

The national game of baseball was very much in evidence at the period of which I write, and our Western Union force had a pretty good team. An invitation to go to Buffalo to play a game with a nine composed of operators was accepted, and I was fortunate enough to be allowed to go as a representative messenger. Of course, the Clevelanders beat at baseball, but the trip was an episode in one's life. "Nat" Hucker, chief operator, and J. W. Tillinghast, manager, were with the party that took us out on a steam launch. There were also J. W. Larish, now of the district electrician's office, Postal Telegraph-Cable Company, New York; Harvey D. Reynolds, now superintendent of the Postal Telegraph-Cable Company, Buffalo, N. Y.; Frank Kitton, now of the electrical engineer's office, Western Union Telegraph Company, New York; George Stewart, John Lapey, and many whom I have forgotten. The most pleasant incident of that meeting was the goodbye at the depot, where Mr. Reynolds sang the sweet ballad, "Larboard Watch Ahoy." I have heard that song a thousand times since, and every time it has brought to my memory pleasant thoughts of Mr. Reynolds, the sweet singer of Buffalo.

Legal.

The Supreme Court of the State of Louisiana on June 28 handed down a decision which reversed a decision handed down recently in the Civil District Court of that State, concerning the liability of a telegraph company for the non-delivery, or improper delivery, of a telegram which had not been repeated at the sender's cost. The court refused a writ of review directed to the court of appeal on application of the telegraph company, which had been made the defendant in a suit for damages, owing to the improper delivery of a telegram and which had been decided against it.

J. B. Brown had arranged for a suit against Rains, Price & Rains, in Sabine Parish, and wired from Sodus, La., directing the clerk of the court to serve the papers without sequestration. The telegraph operator omitted the syllable "out," making the telegram read with sequestration. Rains, Price & Rains sued Brown for damages because of his sequestration of their property, and Brown, in turn, sued the telegraph company and was awarded damages.

The telegraph company took the case to the court of appeal on several grounds, among others being that the stipulation on the back of the telegram that they would not be responsible for errors in transmission unless the telegram was repeated at sender's cost was a contract and relieved them of responsibility. The court of appeal decided against them on the points of law, but reduced the amount of damages, and the telegraph company took the case to the Supreme Court for writ of review, which was denied.

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The Railroad.

Kenneth McKenzie, aged seventy-eight years, until within four years superintendent of telegraph of the Mobile and Ohio Railroad Company, died at Trenton, N. Y., June 20. He began life as a seaman, but entered the telegraph service in 1851 at St. Louis, Mo. During his lifetime he was superintendent of telegraph and of construction on various lines of railways in the West.

In the application of storage batteries in railway electric signal and interlocking devices, the Electric Storage Battery Company, of Philadelphia, has devoted much time to the consideration of the best types of batteries and designs of details for this particular class of work. Its bulletins lately issued, Nos. 99 and 100, for June and July, respectively, contain much of interest concerning this important subject, and should be in the hands of all railroad men interested. They will be sent on application. Address the company, at Allegheny avenue and Nineteenth street.

We have received from H. S. Balliet, the secretary-treasurer of the Railway Signal Association, volume 1 of the digest of proceedings of that organization, comprised within the years 1895-1905. It is a bulky volume of over 550 pages, illustrated with a number of drawings, and will be of great value as a book of reference to many railroad people. The book has been carefully prepared, the immense amount of work involved being clearly apparent. For purposes of record, a summary of the meetings is given with the president's annual address in full; finances and members elected, and list of officers, past and present.

On the westward journey to Denver to attend the convention of the Association of Railway Telegraph Superintendents, a number of the delegates and friends on reaching Omaha were met at the train by Mr. W. W. Umsted, manager of the Western Union Telegraph Company at that point, who extended to the travelers a most hospitable welcome, and who entertained his guests during their short stay by a ride about town.

A well-executed photograph has come to hand showing a group of men and women, delegates and guests to the convention of the Association of Railway Telegraph Superintendents, held at Denver lately, assembled in the snow on the summit of the Continental Divide. It was a novel situation for most of those present, particularly so when the summer date of June 23 is considered; while the zest of the occasion was added to by the prevalence of a heavy snow storm, the temperature marking but 22 degrees. An amusing and picturesque feature is shown in the fact that the majority of the individuals were clad in summer costume, including the conventional straw hat. It was a shivering assembly, yet a broad smile dominated the group.

Mr. E. A. Chenery, president of the Association of Railroad Telegraph Superintendents, and

who is superintendent of telegraph of the Missouri Pacific Railway System, St. Louis, Mo., has appointed association committees to serve for the ensuing year, as follows:

Committee on Arrangements.—Charles Selden, chairman, Baltimore and Ohio Railroad, Baltimore; L. B. Foley, Delaware, Lackawanna and Western Railroad, New York; F. G. Sherman, Central Railroad of New Jersey, Jersey City; C. M. Lewis, Philadelphia and Reading Railway, Reading, Pa.; Charles P. Adams, Southern Railway, Washington, D. C.; W. C. Walstrum, Norfolk and Western Railway, Roanoke, Va., and W. F. Williams, Seaboard Air Line Railway, Portsmouth, Va.

Ladies' Reception Committee.—Mesdames E. P. Griffith, Charles Selden, L. B. Foley, W. F. Williams and F. G. Sherman.

Committee on Topics.—A. B. Taylor, New York Central and Hudson River Railroad, New York; E. Parsons, Illinois Central, Chicago, and P. E. Hewitt, Southern Pacific Company, Houston, Tex.

Committee on Pole Construction to Withstand Sleet and Wind Storms.—William Maver, Jr., electrical engineer, New York; C. H. Bristol, general superintendent of construction, Western Union Telegraph Company, New York, and F. F. Fowle, American Telephone and Telegraph Company, Chicago.

Committee on Uniformity of Superintendent's Duties.—J. L. Davis, chairman, Chicago and Eastern Illinois Railroad, Chicago; W. P. McFarlane, Fremont, Elk Horn and Missouri Valley Railroad, Omaha, and F. H. Van Etten, Southern Indiana Railroad, Chicago.

Committee on Legislation for Wire Crossing.—G. H. Groce, Illinois Central, Chicago; G. C. Kinsman, Wabash Railroad, Decatur, Ill., and J. G. Jennings, Chicago, Rock Island and Pacific Railway, Chicago.

Committee to Confer with the American Railway Association as to State Laws.—E. P. Griffith, Erie Railroad, New York; L. B. Foley, New York, and C. P. Adams, Washington, D.C.

Obituary.

John N. Applebaugh, fifty-four years of age, a native of Bucyrus, O., manager and marine observer of the Western Union Telegraph Company at City Island, Long Island Sound, New York, died June 19.

The death is announced of A. Malpus at Oakland, Cal., a former telegrapher in the early sixties at Paterson, N. J. He was a United States Military Telegrapher during the Civil War., afterwards going to California for the Central Pacific Railroad, and later engaging in fruit culture in which occupation he became wealthy.

You can't afford to be without TELEGRAPH AGE.

The Telegraph vs. the Telephone.

Editor TELEGRAPH AGE:

Permit me to offer a few remarks regarding the question of excessive expenditures in telegraph management referred to in your article headed "Telegraph Conditions," which appeared June 1.

I have often wondered why it was that telegraph corporations have not given practical recognition of the fact that the telephone was operated in direct opposition to their business, and met the telephone companies on their own ground and with their own weapons, namely, by establishing a telephone system of their own to be run in connection with the telegraph offices throughout the country. The telegraph companies already have the pole lines constructed for a long-distance service, and are maintaining offices in cities and villages throughout the country that could handle both branches of the service just as well as one of them. City construction, of course, would be the principal expense of such an undertaking, but the telephone people find good money, and plenty, in the business, are enterprising and readily comply with service demands, thus keeping their system well at the fore.

The great trouble with telegraph companies is that they have had a monopoly on wire communication for so long a period it is hard for them to realize that the time has arrived when they must admit competition, recognize the pressing necessities of the hour, and cater to the people instead of expecting the people to cater to them.

If the public wants the telephone, and it most certainly does, then why should not the telegraph undertake to provide telephones for its use, thus furnishing the single lacking auxiliary feature calculated to make the combined system well nigh perfect. Moreover, the adoption of the telephone would do much to overcome the weakest spot in the telegraph service, that is, the delivery. The public demands quicker action on their short haul, or local business, even if the expense therefor be increased and they are getting it through the medium of the telephone.

The telegraph companies spend thousands of dollars in up-to-date line construction, copper wires, quadruplex and wheatstone instruments, dynamo plants, typewriters and bonus operators, and cut out innumerable relay stations in their endeavor to increase speed and carrying capacity. The result is that business is piled into its destination and into the hands of the delivery department, the latter being but the survival of the same old system that Morse employed fifty years ago, and long since outgrown, namely, the messenger boy, and a lot of irresponsible clerks, who do not know the first rudiments of the business.

If the messenger boy might be eliminated and the telephone substituted therefor, and the dozen or more cheap clerks were to give way to half

the number of older heads paid living salaries, immediate improvements would follow. Lessen the number of times that messages have to be handled, and you lessen the percentage of errors and delays. For instance, John Smith in Portland, Ore., wishes to find out from "Bill" Jones in Seattle, Wash., the price of eggs. To obtain this information a telegram must, under ordinary circumstances, pass through fifteen intermediate hands before he receives his answer. Why the needless delay involved?

Another thing, the apparent increase in taxation imposed on telegraph plants, is explained by the fact that the telegraph systems have heretofore been almost entirely overlooked in this respect, and that the present assessments about which we hear so much, are simply but a just imposition compelling payments that in equity should have been paid for generations past.

However, if taxes must be paid they would probably be no more on poles carrying fifty telephone wires additional than they are now on poles carrying but one telegraph wire, the advantages of which arrangement are obvious.

It is claimed that damage suits are another source of expense. Nine-tenths of the damage suits originate in the delivery department, traceable to slow delivery or to non-delivery, a fact which in many cases is due to incompetency of the clerks handling that department, and the messengers' lack of ordinary horse sense.

It might be said that telephone errors would become a source of damage suits, and that telegraph companies would have to become responsible for them, instead of side-stepping them as they do now. The source of telephone errors principally, as in the telegraph service, is because of cheap clerks, who lack in judgment and common business sense, who put down what it sounds like irrespective of the sense of the reading.

Of course it is but a truism to say that the telephone is here to stay. Its utility is such that the public demand it. A telephone system, therefore, operated in conjunction with the telegraph would furnish a combination of strength and of impregnable front, hence the sooner the opposing enemy, the telephone per se, will be routed, and that, too, by the employment of their own weapons, the better.

The general drift of your article to which I have referred, is apparently one to discourage employees looking to an increase of wages, and reading between the lines, it even goes so far as to hint at a possible reduction, in order to meet the "excessive expenditures," outgoes which in reality are only legitimate expenses, necessary in order to keep the telegraph up to the requirements of the times, and which manifestly should be provided for out of past and future profits.

To illustrate: Suppose a dry goods merchant found that his store was too small, or that his stock was not up to the requirements of the trade, how would it look if he were to announce

to his employees that he was about to enlarge his establishment and increase his profits by adding new features and handling goods that the people demanded, and that it would be necessary, in order to do this, to decrease wages or to discourage merited increases in pay. He would take no such position. He would want the good feeling of every man, from foreman to cash boy; they would get words of encouragement and increases in salary, if the merchant expected to make a success of his undertaking.

With net profits of over seven million dollars for 1905, according to a recent report of the Western Union Telegraph Company, the cry of economy and excessive expenditures does not appeal to the general employee as one of real necessity, but rather a cry for increased profits for 1906. Let the telegraph re-incorporate under the name of "Telegraph and Telephone Company," if their present franchises do not cover the case, and provide for this emergency, the same as the telephone people are doing under the head of "Telephone and Telegraph," a title broad enough in scope to include the future possibilities of covering the entire field with telegraph as well as telephone, as they do now in a small way. But the telephone is their long suit. Why? Because there is more money in it.

A WESTERN OPERATOR.

[Our correspondent does not take altogether an equitable view of the situation of the telegraph vs. the telephone. Referring to but one feature of our correspondent's letter, if he had been a more careful reader of TELEGRAPH AGE than he asserts himself to be, he would have remembered that in discussing the question editorially at different times it has been stated that the telephone could not be utilized except in small places, as a medium through which to deliver telegraph messages. In all large cities at eight o'clock in the morning there are, as the case may be, anywhere from five hundred to twenty thousand messages ready for delivery. If our correspondent can demonstrate successfully to the officials of the telegraph companies how, for instance, any considerable portion of this vast number can be telephoned to business houses immediately after they have opened for business, he will prove a benefactor to the service. The subject is nothing new, for as a matter of fact the telephone has already been tried for the purpose named. The scheme is not practical, and until some genius, the like of which has not yet appeared, shall provide some better means for promoting delivery, the old-fashioned messenger boy must continue to be relied upon for the purpose. Evidently his days are not yet numbered.—Editor.]

"Keep my name on the list. I expect to be a subscriber always. Can't afford to be without TELEGRAPH AGE," is the value W. F. Williams, superintendent of telegraph, Seaboard Air Line, Portsmouth, Va., places on this journal.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

NEW YORK, WESTERN UNION.

Miss Mary Lee, one of the most expert copyists in the Wheatstone and Morse departments, has gone to Denver, Col.

Mr. Edward Mesler has been assigned to the State Camp, Sea Girt, N. J., vice C. S. Pike.

Miss Nina Voorhees, Neostyle operator, has been assigned as assistant to Mr. W. J. Quinn.

Miss Kate Meyers and Miss Mamie Coan have been transferred to Block Island, Mass., for the season.

A daughter was born June 19 to Mr. H. A. Moody, chief message clerk.

NEW YORK, POSTAL.

This is the vacation season and a number of operators are absent in the mountains or at the seashore on recreation bent, while many have been assigned to summer offices. Among those who have returned from outings are W. C. Morris, day annunciator chief, who has been absent three weeks; and Harold Dobbs, who spent two weeks in the mountains.

Jay O. Gegler has been promoted to be annunciator chief, nights.

The second annual outing of the telegraphers will be held August 21 at Boehm's pleasure grounds, New Dorp, Staten Island. The programme of entertainment will include dancing, baseball, football, surf bathing and other outdoor sports. Prizes will be awarded for different events. Those who desire to secure positions on ball teams, Commercials vs. Brokers, should file application with the committee before August 8. Tickets, which includes dinner and refreshments, are placed at \$1 each; ladies' tickets seventy-five cents, and can be purchased from members of the committee.

Mr. S. Cohen, manager of the office at 274 Columbus avenue, has been transferred as manager to the 696 Columbus avenue office, vice W. Fitzgerald transferred to the managership of the 274 Columbus avenue office.

Mr. L. Schwartz has been appointed manager of the 70 West Fifty-eighth street office, vice A. P. Coleman, transferred.

OTHER NEW YORK NEWS.

A son was born to Mr. C. F. H. Johnson, chief clerk to Superintendent of Telegraph E. P. Grif-

the night of June 24-25, on June 25.

Mr. Edward A. Shaw, an old time telegrapher, and one of the senior members of the craft in New York, is among chief operators of the fire alarm telegraph fire headquarters, East Sixty-seventh street, New York, since the decease of George Farrell.

Mr. Edmund J. ... a well-known old time telegrapher, former mail master at Avis, Pa., for the New York Central and Hudson River Railroad Company, and former division claim agent of the Pennsylvania division, has been promoted to be a general office claim agent with headquarters at the Grand Central station, New York.

The death of George Farrell, chief of the fire alarm telegraph, New York, occurred on June 24. Mr. Farrell, who was fifty-eight years of age, had been in charge of the bureau since 1881; he entered the department in 1873. He was a son of James Farrell, who was maritime observer at Sandy Hook since the introduction of the telegraph as a means of reporting the arrival of vessels.

Recent New York Visitors.

Mr. S. P. Lefevy, Columbia, Pa., identified with the Standard Oil Company at that point. Mr. Lefevy is the inventor of the Lefevy telegraph key.

Mr. Nelson C. Buell, identified with the Western Union service at Cleveland, O., for the past

forty-three years. Mr. Buell was accompanied by his wife and daughter, and spent several weeks here.

Mr. W. P. Cline, superintendent of telegraph, Atlantic Coast Line, Wilmington, N. C. Mr. Cline was accompanied by his wife and daughter and was returning from the Denver convention of the Association of Railway Telegraph Superintendents.

Mr. John Cowden, late of the Marconi station at Salsneset, Mass., and formerly of Pretoria, South Africa, and Albany, West Australia; and Charles Quayle, of Pretoria, who is a native of Australia, and who is visiting this country on a vacation. Mr. Cowden will remain permanently in New York, having accepted a position with the Postal Telegraph-Cable Company, but Mr. Quayle will return to his South African home in August.

The Train Despatchers' Convention.

The convention of the Train Despatchers' Association of America, the nineteenth in the series, was held at Buffalo, N. Y., June 19, 20 and 21. The association has a membership of 954, and twenty-eight applications for membership were received. The treasurer holds \$2,500 to the credit of the association. Two entire sessions were devoted to a discussion of the interpretation of certain train rules and to practices relative to train movements.

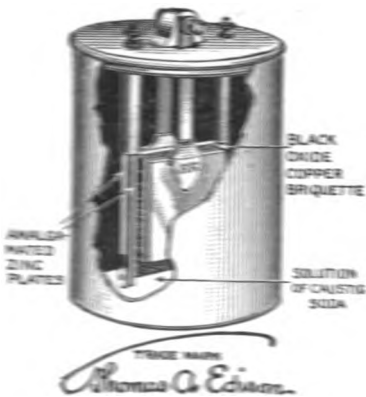
The election of officers resulted as follows: President, J. E. Holleran, Boston and Maine Railroad; vice-president, R. P. Riggs, Rock Island; secretary and treasurer, J. F. Mackie, Rock Island; executive committee, J. B. Jerome, Indiana Bridge Company, Louisville, Ky., chairman; J. D. Beaver, Pennsylvania, Buffalo; T. W. Kane, Santa Fe, Spokane; J. F. Molineux, Illinois Central, Fulton, Ky.

Mr. S. R. Wright, secretary and treasurer of the Telegraph Signal Company, of Rochester, N. Y., was present and demonstrated his invention of an electric call bell and signal apparatus.

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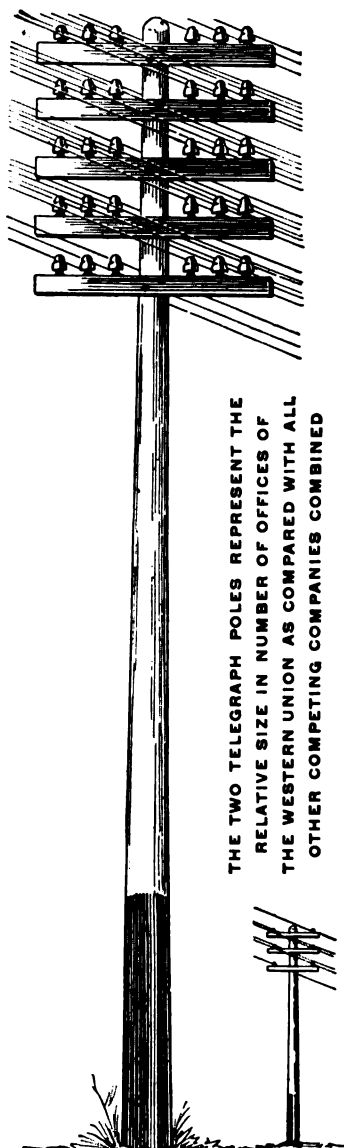
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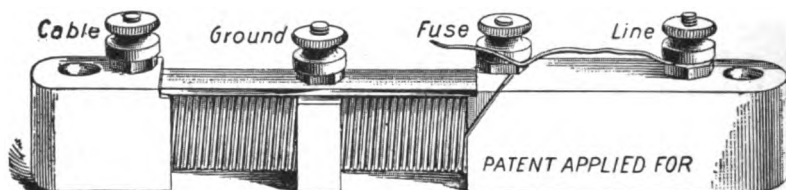
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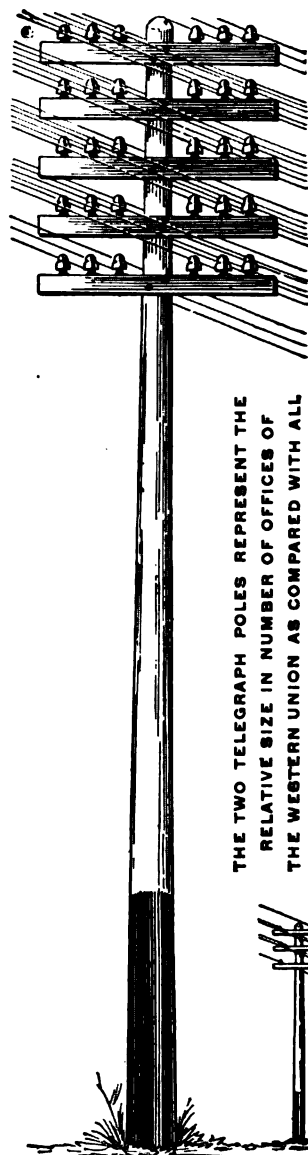
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SOME POINTS ON ELECTRICITY.

The Loopswitch and Loopswitch Testing. In Three Parts—Part Two.

BY WILLIS H. JONES.

In addition to the general construction and arrangement of the component parts of a modern loopswitch board and several of the accessories described in the preceding installment of this article, issue of July 16, a number of useful devices are also provided for the purpose of facilitating tests of all kinds of faults likely to arise. The loop chief is not only called upon to test the loops proper, but is expected to locate the probable missing link in every connection he makes through his board when they occur. For this reason he should be unusually well informed not only with regard to the functions of all telegraph apparatus and connections but possess a pretty thorough knowledge of every department of the office and building. If after a connection has been made between two or more points and an opening or other fault prevents its proper operation he must from his central location determine the direction of investigation and immediately despatch a messenger, of which in large offices he usually has several, to that point, and have the tangle straightened out.

Aside from the changing of regularly assigned branch office and broker loops from one duplex or quadruplex set to another during temporary

interruptions of circuits, the newspaper loops are probably switched around more than any others, and bids for the latter are continually coming in from every quarter. For this reason the newspaper division is usually annexed to the loop-switch. In the newspaper division and in close proximity to the switchboard is situated the various call-wire circuits, consisting of common conductors carrying all the different newspapers, brokers and other branch offices, which may desire to report interruptions to any of their loop connections or give other information in relation to the service. Each loop is numbered and every newspaper, for instance, has several loops which are connected and disconnected as called for.

When an operator arrives in a newspaper office he immediately calls up the operator on the common newspaper circuit and gives the number of his loop. The number is copied on a small slip of paper and hung on a conspicuous hook over the desk to indicate to the various chief operators in the room that that loop is idle and available in case any of them have a demand for it. Each newspaper has a separate hook bearing its name. When a call is made for a loop the slip of paper is taken down and properly endorsed with the name of the station using it, together with the number of the "flycord" or multiplex apparatus it is to be placed in connection with by the loop chief. As soon as the operator in the newspaper office has received the special he at once reports "clear" over the call wire when the loop is disconnected, and a new slip bearing that number is hung to await another bid. From these slips the bookkeeping department easily trace any missing press matter that may fail to be turned in. The slips also show the time occupied in receiving or sending each special. The accumulation of too many idle loops on one hook or a scarcity of such loops also enables the loop-chief to regulate the force required in the various newspaper offices to suit the demand.

LOOP TESTING.

The simplest and at the same time most frequent test a loop chief is called upon to make is that of first ascertaining whether a loop is "single" or "duplexed" before placing it in the circuit designated. For this purpose a sounder, one post of which is connected with the 30-volt local battery and the other post with a flexible cord and wedge, is placed in a convenient location in the board. If the loop is "duplexed" the sounder will respond when the wedge of the loop is tapped with the battery wedge of the sounder test circuit. If either the sending or the receiving side of the loop should happen to be open the

fact will be immediately noticed and, of course, remedied before placing the loop in circuit. The method is not only speedy but eliminates the uncertainty that might be due to an open key or relay point, should the test be made after the loop was placed on a multiplex set.

The apparatus used in newspaper offices is a combination set in order that the loop may be used on either duplex or single-line circuits, according to the demand. If such a loop should open the loop chief is able to designate which half of the loop is defective very readily by requesting the newspaper operator to "duplex" it. As the wedge is marked "sending" and "receiving" side, respectively, the linemen's investigation is merely confined to that half of the loop which shows no "ground." Should a loop while "duplexed" show an opening on one side, but be "O. K." when "singled," the fact indicates that the break is in some portion of his apparatus. In most cases of this kind, the opening will probably be found in an imperfect contact between the switch lever and the disk it rests on; or, possibly a binding post on one of the sounders has become loose or disconnected. In the event of the switch contact being bad, a very common occurrence, the loop chief readily ascertains the fact by requesting the operator to "press down the level;" or perhaps he will say "single it a moment and then duplex it again." Usually either of these requests results in clearing the fault.

(To be continued.)

[Important articles by Mr. Jones, appearing in back numbers are as follows, and may be had at the regular price of ten cents a copy, except those appearing prior to a year from the current date, for which a charge of twenty-five cents apiece will be made: A Useful and simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadriplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, Inc., June 1 to July 16, Inc.; The Future Quadriplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, Inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, Inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadriplex Circuits, June 16; Electric Power from the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16; The Dynamo—Series, Shunt and Compound Wound, Feb. 1-16, March 1; The Storage Battery, March 16-April 1-16-May 1-16; A New Double Loop Repeater—Comparative Efficiencies of a Polar and a Neutral Relay, June 1; Influence of Weather on Static—An Electrical Phenomenon, June 16; Induction, Leakage, Crossfire, July 1-16.]

The Railroad.

An appropriation of upward of \$500,000 has been made to rebuild a portion of the telegraph lines of the Rock Island Railroad system. The two principal offices will be located at Chicago and Topeka.

Mr. W. J. Holton, chief train despatcher and superintendent of telegraph of the Chicago and

Western Indiana Railway, Chicago, has resigned to accept the position of cashier of the West Englewood Bank, of that city.

A patent, No. 824,887, for a train despatching and recording system, has been issued to Paul J. Simmen, of Chico, Cal. A railroad signal system distinguished mainly by having an indicating board at the train despatcher's office, which is connected with the various block sections along the road by separate metallic circuits. Special contact plates are employed, and the passage of a train causes the circuits to be completed which indicate the position of the train at the despatcher's office. The despatcher may communicate with any train at all times.

Wireless Telegraphy.

The Dominion Government has completed arrangements with the Marconi Wireless Telegraph Company of Canada, Limited, to install several more stations in the Gulf and on the Atlantic coast.

The naval bureau of equipment is arranging for the disbursement of the \$60,000 just appropriated by Congress for establishing on the Pacific Coast a chain of wireless telegraph stations similar to that which exists from Cape Elizabeth, Me., to Galveston. The first of the new stations to be built is that at Cape Flattery, for which the contract has been awarded. Five other stations will be installed.

A passenger on one of the transatlantic steamers recently, while homeward bound, sent a wireless message from midocean to his business address in New York and obtained an answer to the same. The message was received at the Cape Race wireless station and forwarded by aerial wires to New York. The reply reached the passenger via the Siasconset wireless station twenty-four hours before his reaching port, and two days after he sent his message.

Legal.

Judge Pollock of the United States court has handed down a decision that the case of the State of Kansas against the Western Union Telegraph Company came under the State laws and not the Federal laws, and remanded the case to the State Supreme Court. The original action in the case was a quo warranto proceeding brought by the attorney general of Kansas in the Supreme Court to oust the Western Union company from doing domestic business in the State because the company refused to pay the charter fee of \$2,000, the amount due, according to the newly-enacted Bush law, on its capital stock.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

The Cable.

Cables interrupted July 28:

Venezuela	Jan. 12, 1906
Messages may be mailed from Curacao or Trinidad.	
Pinheiro "via Cayenne"	Aug. 13, 1902
Santa Cruz de la Palma (Canaries)	July 12, 1906
Bolama (West Africa)	July 24, 1906

The Archiv für Post and Telegraphic points out that the fleet of fifty-three cable steamers now aggregates 95,000 tons and 25,000 H. P., and that of the number, two are owned by Germany, five by North America, two by South America, one by China, three by Denmark, six by France, 30 by Great Britain, and one each by Italy, Japan, New Zealand and Holland.

The cable steamer Grossherzog von Oldenburg, belonging to the Norddeutsche Seekabelwerke A. G., Nordenham a. d. Weser, Germany, has just established a record in deep water repairing work, having lifted and repaired an Atlantic cable at a depth of over 2,500 fathoms in the short period of four days and four hours after arrival on the cable ground, or three days from hooking the cable to slipping the final splice. The expedition was in charge of Mr. M. J. Giessen, Mr. H. E. Cann being the chief electrician.

The Island of Hachijo lies due south of Tokio, distant about 160 miles, and during the war with Russia a cable was laid to it from Kawasaki, a point midway between Tokio and Yokohama, for military purposes. This has now been extended about four hundred and thirty miles to the Bonin group, one of Japan's outposts in the Pacific. The Bonins are better known to-day as the Ogasawara Isles, and number twenty in all, having a total area of 27 square miles. The Japanese Government's own cable-laying steamer Okinawa-Maru, built at Renfrew, was entrusted with the work of laying the line from Hachijo to the Ogasawara group, she being met at that point by the Commercial Pacific Cable Company's ship, which had laid the cable northward from Guam, an island belonging to the United States, in the Ladrones, or Marianna Archipelago.

Death of Mrs. Richard O'Brien.

Mr. Richard O'Brien, assistant superintendent of the Western Union Telegraph Company, Scranton, Pa., has sustained bereavement by the death, on July 13, of his wife, whom the Scranton newspapers speak of as an estimable lady whose charity and goodness made her well known to great numbers.

Mrs. O'Brien, whose maiden name was Miss Sarah Harrison Marks, was born near Petersburg, Va., and was a descendant on her mother's side of General William Henry Harrison, ninth President of the United States. She was an honored member of the Daughters of the American Revolution and of the Daughters of 1812.

The death of this lovely lady terminates a

career of ideal domestic happiness lasting for forty years, which had its beginning in a romance of the Civil War. Among the few gallant Virginians who, with Pickett, reached the stone wall which marked the high water mark of Pickett's great charge at Gettysburg, Captain Dick Marks, Mrs. O'Brien's only brother, was desperately wounded. He recovered and again with Pickett helped to hold Lee's thin line in front of Richmond and Petersburg against Grant's thunderous blows. Meantime Miss Marks, with a few slaves who remained faithful to her family, had fled from the approach of the Northern invaders to Petersburg, and even there one of their trusty negroes was killed and another wounded in her home by the bursting of shells from Grant's guns. It was at this juncture that Mr. O'Brien, who was then chief operator United States Military Telegraph at the front, was able to extend kindness to the Confederate captain, who had been again wounded in an assault on our lines.

Petersburg presently falling into our hands, Mr. O'Brien met, loved and himself surrendered to the lovely daughter of the Confederacy. They were married in 1867.

Mrs. O'Brien is survived by her husband and one son, Richard Marks O'Brien, and six grandchildren. Beyond the loving care of her domestic circle her beneficence extended widely through many charitable organizations in which she was an active worker and to which her death will prove a great loss.

OBITUARY NOTES.

A. B. Gunn, of Chicago, sixty-three years old, a veteran telegraph operator, committed suicide July 15 by inhaling gas through a rubber tube.

Mrs. W. G. Jones, widow of the late W. G. Jones, at one time manager of The United Press, died on June 30, at the Memorial Hospital, Brooklyn, as a result of an operation for blood poisoning.

Charles A. Elster, of Detroit, Mich., a well-known real estate man of that city, died suddenly on July 11, aged forty years. From 1892 to 1898 he was manager of the Western Union Telegraph Company at Grand Rapids, Mich., when he was promoted to the managership of the Detroit office, a position he held until a few years ago, when he retired to engage in business on his own account. He was regarded as an exceptionally competent telegraph official.

Orders, if sent to Telegraph Age, Book Department for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of TELEGRAPH AGE, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

Personal Mention.

Mr. Andrew Carnegie, who is said to have begun his autobiography in this country last winter, is reported to be hopeful of finishing it during his stay in Scotland this summer.

Mr. J. J. Ghegan, president and general manager of J. H. Bunnell and Company, Ltd., manufacturers of telegraph and electrical supplies, 20 Park place, New York, and an old-time telegrapher, returned from Europe on July 18, after an absence of several weeks on vacation.

Mr. Thomas C. Devine, assistant chief operator of the Western Union Telegraph Company at Boston, has been appointed secretary of the Harvard crew which is to go to England to compete with the Cambridge crew. For many years Mr. Devine has been in charge of the telegraph at Red Top, the Harvard headquarters at New London, and has been selected to accompany the crew because of his popularity with the oarsmen.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Mr. J. C. Barclay, assistant general manager and electrical engineer of the company, has returned from a business trip which took him through New York and the New England states, going westward as far as Buffalo, the furthest eastern point reached being Portland, Me.

The Barclay printing system is now being installed on the New York-St. Louis circuit. Four Barclay printers are now operated with Chicago, one with Buffalo and the equipment of the St. Louis circuit will make the sixth installation of this system in use in New York.

The annual meeting of the stockholders of the American Union Telegraph Company of New Jersey was held at Jersey City, N. J., on July 11. The following named officers were elected for the coming year: Col. R. C. Clowry, president; Thomas F. Clark, vice-president, and A. R. Brewer, secretary-treasurer; R. C. Clowry, J. B. Van Every, Thomas F. Clark, B. Brooks and J. B. Bertholf, directors; C. W. Conklin, F. E. Coyle and George Roehm, judges of election.

Russell Sage, the well-known financier, a prominent director of this company, and a member of the executive committee, died on Sunday, July 22, at his summer home at Lawrence, Long Island. The funeral which occurred on Tuesday, July 24, was attended by a number of the executive officers.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

President Clarence H. Mackay has given \$100,000 to establish a chair of electrical engineering at the University of California, as a memorial of his deceased brother, John W. Mackay, Jr., for the foundation of a John W. Mackay, Jr., Professorship of Electrical Engineering. This gift is presented jointly with Mr. Mackay's mother. Prof. C. L. Cory,

head of the department of mechanical and electrical engineering, is to fill the chair. This bequest is a sequel to the offer of \$100,000 toward the rebuilding of the university telegraphed to President Wheeler by Mr. Mackay a few days after the earthquake. The annual income from the money will be applied to the payment of a professor's salary, and the expenses and maintenance of the department, the original fund to be kept intact in perpetuity.

This company is to have a fine new office in New Orleans. The building at 206-210 St. Charles street has been leased and extensive alterations are about to be undertaken, by which the structure will be remodeled into one of the most completely appointed telegraph buildings in the extensive chain belonging to the Postal company. The facilities of the new office will be increased by an extension of the underground system, which will include an enlarged pneumatic tube service connecting the office with the Cotton Exchange. It is hoped to have the office ready for occupancy by October 1.

Grand Trunk Pacific Telegraphs.

In a recent interview with A. B. Smith, general manager of the Grand Trunk Pacific Telegraphs, while at Winnipeg, published in a Canadian paper, Mr. Smith is reported as saying:

"The company works under Dominion charter, which gives it the right to use telegraph, telephone or wireless as it chooses. The company is capitalized at \$5,000,000, and is entirely independent of the Grand Trunk Pacific Railway, except in that it is under contract to use the new railroad's lines whenever possible. In addition to this, the company plans to do business apart from the railway lines, and to run wires across country.

"As for United States connections, we may use Western Union or Postal, or both. The Grand Trunk Pacific lines, when completed, will be the greatest in Canada. It is our aim to make them universal and to include everything that comes our way.

"The telephone permit in the charter is there because we may at any time wish to operate a long distance service. There is no present intention of competing with the Bell people, but if opposition to the Bell company looks good, it will be done. We may install rural 'phones."

Recent Telegraph Patents.

A patent, No. 826,403, for a telegraph key, has been awarded to J. P. Campbell, of Pulaski, Va.

A patent, No. 824,029, for a transmitting key for telegraphic circuits, has been awarded to Isidor Kitsee, of Philadelphia, assignor of one-half to William J. Latta, Philadelphia. In combination with a telegraphic transmitting key is a step-by-step movement adapted to change the polarity of the transmitting key, the step-by-step movement actuated by electromagnetic means.

A patent, No. 824,028, for a telegraphic sending device, has been secured by Isidor Kitsee of Philadelphia. Several stationary members have upon

their faces contact portions of predetermined and definite character. Movable members are inserted between the stationary members, and have also upon their faces contact portions of predetermined and definite character. A movable arm is arranged to traverse the region of the contact portions and establish a circuit.

Patent expired:

Patent No. 406,489, for a telegraph key, held by H. A. Waldo, of Reno, Nev.

Municipal Electricians.

FRANK C. MASON RETIRES.

Frank C. Mason who for twenty-two years has been at the head of the police telegraph in the Borough of Brooklyn, first as superintendent under the old city organization, and after consolidation as assistant superintendent of the Greater New York system, retired on half pay on July 18. Mr. Mason will in future make his home, at least during the major part of the year, at Washington Mills, N. Y., near Utica, his birthplace, which he has recently refitted and put in fine order.

The telegraph service of the police in Brooklyn is under the control of Superintendent Michael R. Brennan, with a head office at police headquarters, Mulberry street, Manhattan, but the man in charge in Brooklyn is Chief Operator Zeidler, who will remain at the head of the local telegraph bureau. From the date when Mr. Brennan became Mr. Mason's superior officer, due to the establishment of Greater New York, the relations between the two men continued to be of the most cordial character, each entertaining for the other a true estimate of the excellence of service rendered.

Mr. Mason was appointed to the office from which he has just been retired, March 11, 1884, leading the list in a competitive examination for the same.

The telegraphic equipment in the police department was far from being as perfect then as it is now. In fact it was even crude. Communication between the precincts and headquarters was maintained by means of the dial telegraph instruments. There were nine precincts then to the thirty-three in existence now. All these are furnished with modern telephone and telegraph facilities, mainly through the work of Mr. Mason.

Mr. Mason was manager for the Atlantic and Pacific Telegraph Company in Poughkeepsie, N. Y., before he came to Brooklyn. His early education was obtained in the public schools of Utica.

As a lodge member Mr. Mason is very widely known. He belongs to the Commonwealth Lodge 409, F. and A. M.; the Scottish Rite bodies, Masonic, of Brooklyn; Kismet Temple, of the Mystic Shriners and is also a member of the Brooklyn Lodge of Elks.

In 1886 he organized the International Association of Municipal Electricians. Mr. Mason also organized the Long Island Telephone Company, from which sprung, later on, the present New York and New Jersey Telephone Company.

It will be remembered that the dates fixed for the convention of the International Association of Municipal Electricians at New Haven, Conn., are August 15, 16 and 17. The meeting will be an interesting one and present indications are that the attendance will be a large one.

The hotels selected at New Haven as desirable for the accommodation of the electricians are: Tontine and Oneco, conducted on the European plan; Oneco, Davenport and Gard, American plan. Many associatemembers of the association will make exhibits of goods, thus affording an excellent opportunity for the inspection and study of much that is new in methods and in electrical construction and apparatus. An interesting programme is being matured providing for the social entertainment of visitors.

Mr. William H. Thompson, the city electrician of Richmond, Va., is, according to current newspaper gossip, at work developing a device which is denominated the "televue," and which it is said will enable a person talking over the telephone to see the face and figure of the person to whom he is talking. The instrument, it is declared, can be used with a wire of indefinite length and gives a vivid image.

Mr. Booth Presents "73" to the Latest Claimant of the Invention of the Telegraph.

Editor TELEGRAPH AGE:

Allow me to present through your columns my "73" to Mr. Julius Lynch Clemmons, of Louisville, Ky., the gentleman who claims to be the inventor of the telegraph, and whose statement appertaining to such claim, together with your introductory remarks thereto, appeared in the July 16 issue of TELEGRAPH AGE. I regret that the information conveyed in the article referred to was not earlier available, for then I would have been glad to have called on Mr. Clemmons when I attended the home-coming of the natives of old Kentucky in June last.

It would be of great interest to me to know if the silent system described as his invention was used by O'Reilly in Kentucky after the suit of Morse vs. O'Reilly was decided in favor of Morse. If I remember correctly the Bain system consisted of a register with chemically prepared paper that ran over a needle conducting the electric current to make dots and dashes. All way offices had to use a main battery, cut in at the appointed time, and cut out when time was out, regardless of where you were in a message. Frequently an hour would elapse before the message was completed. This fact was the cause of my being retained as an operator when the Morse and O'Reilly companies consolidated, as my office showed the largest receipts. Charles Lathrop was the O'Reilly operator, succeeding J. J. McNally, now car accountant of the Louisville and Nashville railroad, Louisville, Ky.

N. M. Booth.

Evansville, Ind., July 20.

Our Book Department is complete. Send for a Catalogue.

Business Notices.

The announcement is made in another column that during the next thirty days the United Electrical Manufacturing Company of New York, of which Horace G. Martin, the well known telegrapher, is vice-president and general manager, the Vibroplex transmitter has been reduced in price to \$7.50, the avowed purpose of this radical move being to cause these instruments to be placed "in every telegraph office in the United States and Canada." Telegraphers will be interested in reading the company's advertisement.

THE REMINGTON AT THE TELEGRAPHERS' TOURNAMENT.

The results of the Telegraphers' Tournament held at Boston on June 29, leave no doubt as to the favorite "mill" of this enormous class of users of writing machines. Operators using the Remington typewriter carried off three out of four first prizes and six out of eleven of the prizes offered at the tournament.

In the first event—receiving twenty railroad messages—Mr. William F. Bannester and Mr. James W. Harrison, both of Philadelphia, won first and second prizes, respectively—both using the Remington. In the second event, which was a team match for sending and receiving twenty-five messages, the first prize was won by Mr. David J. Ellington, of New York, sender, and Mr. H. J. Finn, of Boston, receiver, both Postal operators. The Remington typewriter used by Mr. Finn in this contest has been run seventeen hours a day for seven years, being used by two different men in the same office, and is still rendering excellent service—good enough to win a championship.

In the press contest, Class B, Mr. F. T. Howe, of New York, was another Remington prize-winner in the contest for receiving 350 words.

In the last contest, receiving 500 words of press work, the first prize was won by Mr. Edward J. Coleman of Providence, using a Remington.

The Remington typewriter has always stood high in the favor of telegraphers on account of its great endurance and capacity for speed. The above figures show that, in both of these essentials it lived up to its reputation at the Boston tournament.

Mr. Thomas A. Edison has come into possession of the old Edison family home in Milan, Ohio, in which he was born on February 11, 1847. The deed of transfer comes from a granddaughter of Mr. Edison's sister. The house stands on a beautiful eminence overlooking the Huron River. It is a story and a half structure, modernized in late years, built of red brick, and surmounted by two wide old-fashioned chimneys. It is an object of much interest to visiting strangers.

TELEGRAPH AGE should go regularly to every one interested in the telegraph. Write for a sample copy.

Phonograph Jobbers Meet Mr. Edison.

The National Phonograph Company, which is synonymous with the names of Thomas A. Edison and W. E. Gilmore, respectively the inventor of the phonograph and president of this subsidiary company of the Edison interests, in the entertainment of its jobbers recently from all over the United States and Canada, extended a welcome to its guests that for a unique expression of genuine hospitality should occupy a chapter by itself in the annals of events of like character. Mr. Gilmore, who is vice-president and general manager of the Edison Manufacturing Company, acted as host, and others prominently identified with the company were assiduous in their attentions to the visitors. The object of the coming together of all these people, altogether numbering over 200, was for the purpose of promoting general acquaintance among Edison forces, for a pleasant reunion and to celebrate the largest single year's business yet experienced. The guests were received at the Waldorf-Astoria, New York, where headquarters was established, and from which place excursions were made in different directions to points in and about the city, including, of course, a trip to Orange to meet Mr. Edison at his home office and to inspect the company works. Here an elaborate luncheon was served, and a presentation of an elegant gold watch was made to Mr. Edison by the assembled visitors. The concluding feature of the affair was a banquet tendered to the strangers at the Waldorf-Astoria on the evening of July 20.

Resignations and Appointments.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. A. L. Kenney, of Richmond, Va., has been appointed manager of the office at Helena, Mont., vice W. A. Fraser, resigned to enter the banking business.

Mr. F. B. Moss, manager at Gloversville, N.Y., has been promoted to the managership of the office at Oswego, N. Y., vice W. H. Donahue, resigned to enter the railroad business.

Mr. E. D. Miller has been appointed manager at Anniston, Ala., vice J. A. Finch promoted to be manager at Mobile, Ala. The latter succeeds Mr. C. A. Garland, recently appointed superintendent.

Mr. C. E. Clayton, night train despatcher, Chicago, Burlington and Quincy Railroad, Galva, Ill., was married to Miss Clara Nasing, of Aurora, Ill., on July 9. Miss Nasing was formerly an operator in the Aurora Western Union office.

Mr. W. E. Peirce, for the past two years repeater chief for the Postal Telegraph-Cable Company at Ashfork, Ariz., has returned East and has accepted a similar position with the Western Union Telegraph Company at Pittsburg, Pa.

The Military Telegraphers' Pension Bill in the House.

Despite the letter of Congressman Sulloway to Mr. F. A. Stumm, of New York, published in *Telegraph Age*, June 16, to the effect that the bill now pending in the House providing for placing the military telegraphers of the Civil War on the pension list, had been referred to the wrong committee, the communication of Col. William B. Wilson, president of the Society of the United States Military Telegraph Corps, printed July 16, stoutly maintained that such was not the fact, and quoted Hon. Sereno E. Payne, chairman of the Committee on Ways and Means, to that effect. Mr. Stumm has been indefatigable in his support of the claims of the military telegraphers, and a further letter respecting the matter, addressed by that gentleman to Hon. Herbert Parsons, who has warmly espoused the cause of the bill, elicited a reply under date of July 16, which is as follows:

"Your letter of May 31 in relation to the bill (S 2165) to extend the provisions of the pension laws to those engaged in the military telegraph service during the Civil War, was duly received, and I delayed answering until I could make inquiries and have some definite report to make to you. As you doubtless already know, however, Congress adjourned without the bill having been reported from the Committee on Invalid Pensions. The bill will retain its position at the short session of Congress next winter, and will not have to be re-passed by the Senate."

What a Toy Telegraph has Led To.

American residents of Havana, Cuba, think that undue harshness has been shown in the case of Miss Millie Brown on the Isle of Pines. The spectacle of an American girl of nineteen thrown into jail among a lot of male prisoners and confined for thirty-three days is deeply resented.

The cause of her detention seems to them inadequate, though it is based on a law enacted by General Leonard Wood at the time of the American occupation of Cuba.

Miss Brown was arrested for putting up and using a private telegraph wire between her house and that of the American postmaster, Mr. Louis C. Giltner, passing through the house of Mr. H. S. Augustine. The two principals in the case declare the line was put up merely as a plaything, and was chiefly used to call Giltner to his meals at his boarding house, run by Miss Brown's parents, and for telegraphic conversation between the two of a personal nature. The young people are said to be engaged.

However, the erection of a private telegraph line without authority, is contrary to law, and Miss Brown and her male friends were summoned before the local judge and sentenced to a fine of \$100, divided among the three, or imprisonment for one hundred days, similarly divided. Payment of the fine was indignantly refused and the two men and the girl were taken to the lockup, where, as there

are no accommodations for female prisoners, Miss Brown was forced to enter the common jail.

Recent New York Visitors.

Mr. Frank H. Knights of the Transvaal Postal Telegraphs, Pretoria, South Africa, accompanied by his sister, arrived in New York Sunday, July 15, from Vancouver, B. C., on a trip around the world. He sailed hence for England on July 18. While in New York he was a welcome caller at the offices of many friends, including that of *TELEGRAPH AGE*. He expects to reach his home in Pretoria on October 1.

Mr. J. E. Rowe, wire chief of the National Transit Company, Pittsburg, Pa. Mr. Rowe took occasion to call upon a number of his New York friends while in town. He will spend a vacation of two weeks at Atlantic City before returning to his home.

Mr. John F. Riley, an old-time telegrapher, associated with the Western Union Telegraph Company, and one of Washington's best representatives of the craft. Mr. Riley was accompanied by his wife, and was returning to his home from a vacation in Connecticut.

The English Postoffice Telegraph Operators.

The postoffice select committee, appointed to examine the grievances of the English telegraph operators, says the *London Electrical Review*, in the course of its inquiry has, as is the case in all such committees, to hear remarkable statements by the witnesses examined. The following is worthy of record:

"You say that improvements in the instruments have been made, and that they are less liable to get out of order—that the ordinary telegrapher is called upon to exercise no greater skill in adjusting the instrument than is required by a woman who works a sewing machine. Do you know this yourself personally? Yes. It is a very simple matter. There is a screw in the relay; if the current is too strong he turns the screw one way; if the current is too weak he turns it the other. It is a matter of the earth.

"That scarcely squares, does it, with the statement of Sir William Preece recently as to the development of telegraphy, and Prof. Thomson?—I think the instrument has been simplified and improved of late years. That corresponds with the actual facts, and even that adjustment is a very rare thing; it happens about once in a fortnight."

Mr. Charles W. Thayer, now of Des Moines, Ia., an old time Associated Press operator, well known in New York, Chicago and elsewhere throughout the country, recently delivered an interesting address on his observations in Mexico, where he recently spent a month, to the children of McKinley school in South Des Moines. The local papers speak favorably of Mr. Thayer's efforts.

Charles A. Garland, a New Southern District Superintendent of the Postal.

The promotion of Charles Addison Garland, manager of the Postal Telegraph-Cable Company, at Mobile, Ala., to the superintendency of a new district, No. 8 of the Southern division, and effective from July 1, was very welcome news to a wide circle of friends, in and out of the service, who hold Mr. Garland in high esteem, for his many estimable qualities, both as a gentleman and an efficient executive officer. His temporary headquarters will be established at Atlanta, Ga., although later he will be located permanently at Memphis, Tenn.

Mr. Garland was born at Lynchburg, Va., May 29, 1855, and is therefore fifty-one years of age. His entry into the telegraph service was at Glade Springs, Va., in May, 1870. His earlier employment was that of an operator mainly in the joint service of the railway and Western Union Telegraph Company. Later he became a press operator in the Western Union office at Rome, Ga., subsequently



CHARLES A. GARLAND.

Lately Appointed a Postal Superintendent at Memphis, Tenn.

filling the respective positions of press operator, chief operator and manager of the Western Union office at Selma, Ala. His advent into the Postal employ occurred when he was appointed manager at Birmingham, Ala., in 1889, a position from which he was transferred to similar posts, first at Pensacola, Fla., and afterwards at Mobile, Ala., a point he reached July 1, 1901, succeeding the late Platt Roberts.

Mr. Garland has hosts of friends in the South who hold him in the highest esteem. Prior to his leaving Mobile the members of the United Produce Company presented him through their president with a watch pendant, set with diamonds and suitably inscribed. The new superintendent is called upon to preside over a district that will speedily take important rank.

TELEGRAPH AGE will furnish operators with just the kind of practical information they require.

Telegraph News Service in 1847.

The Boston Daily Bee in 1847 claimed a circulation unequaled by that of any other paper in New England. A copy of October 4 of that year lies before us, the property of George M. Dugan, formerly superintendent of telegraph of the Illinois Central at Chicago, now a farmer at Tip Top, Ky. The make-up of the small-sized, time-stained sheet appears quaint and old fashioned, and the information printed, even upon important topics, is meagre, scanty and thin. The Magnetic Telegraph of that day transmitted but a slender thread of news, and one carefully scans the columns in the endeavor to find what, indeed, is credited to its agency. Perhaps the marked absence of news by telegraph may be ascribed in part to the fact, announced in a two-line notice in small type printed on the first page, that "the telegraphic wires between Boston and New York are broken." Be this as it may, nothing else appearing on that page can be traced to telegraphic origin.

In 1847 the United States was at war with Mexico, and on the second page, the latest Mexican news, for which it may well be supposed every one was eager to hear, for a great battle had been fought and the City of Mexico had been captured, was covered by less than two-thirds of a column, and this, too, made up in part largely by brief paragraph extracts from other papers, etc. This column of telegraphic "news" is prefaced with a bracketed explanatory notice which says:

"On inquiring at the telegraph office last evening for our despatches from New York, we were informed that the wires were severed: we therefore condense the following from a despatch to the Times."

The editor states a truth, and is optimistic of the future, when in a concluding bracketed notice he says:

"The accounts are very vague and unsatisfactory, but in to-morrow's edition we shall probably be enabled to give a full account of the movements of our army in Mexico."

While the telegraph was new at the time referred to, and not always reliable in its operation, the age by comparison with that of the present, was a slow and complaisant one, and apparently the editor of the Bee was not much disturbed when news, even of the utmost importance, failed to reach him, a day late, apparently serving his purpose equally as well as if received promptly on time. The droning of many "Bees" must have been heard distinctly in that Boston office!

Railroad telegraph construction in some parts of the Far West has progressed with such rapidity lately that it is said an urgent demand exists for the services of telegraph operators.

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NEW YORK, AUGUST 1, 1906.

The Book Department of *TELEGRAPH AGE*, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientage. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The misuse of the word "telegraphone" is apt to create wrong impressions as to its true meaning, and consequently lead to confusion and error. For instance, the term as it is generally employed in this country, especially in railroad and telegraph circles, where, indeed, it is most frequently met with, applies in brief to a telephone circuit attached to an ordinary telegraph line. In Europe, on the other hand, and even to a certain extent here in America, an understanding of the word is held to denote the device of Poulsen, which is, as a matter of fact, no more or less than a form of phonograph or graphophone, for the instrument records speech on a metal band. As the definition of the word now coming more freely into usage, is so diverse in meaning, it would seem that a change might properly be made by the adoption of a new title for one form of interpretation.

The completion of the Commercial Pacific cable to China was justly regarded in that country as a notable event. At the complimentary dinner at Shanghai in April, tendered by the American Association of China, to George Gray Ward, of New York, vice-president and general manager of the cable company, Dr. Gilbert Reid, the president of the association, made the following graceful remarks:

This is an enjoyable and important event which we meet to celebrate to-night, the completion of the first cable across the Pacific, the widest ocean of the world. Even the great European cable companies, whose representatives meet with us on this occasion, will rejoice in the further exhibition of modern inventive genius and commercial energy, forming one more link to bind the nations and to make the whole world kin. For centuries men saw the lightning flash and felt the force of the electric battery that lay stored in earth and sky, but failed to realize that it could be used, and made a blessing. It remained for a Samuel Morse, a Cyrus Field and a John Mackay, catching the inspiration of Benjamin Franklin, to seize the power and lay the current that would cross the continents and pass beneath the seas, turning the whole round globe into one vast whispering gallery. Mr. Mackay having delved into the earth to bring forth its wealth, then dared to dive into the sea and bind with a cord of steel the two continents. He met immense difficulties, even from American officers, but was ably seconded by the gentleman at my right, Mr. George Gray Ward.

Governing Preferment.

We gladly accede to the wishes of a correspondent who requests that the subject of an editorial appearing in these columns a number of years ago, be again taken up. We have decided to republish the original article entire, for the subject is one regarding which *TELEGRAPH AGE* has pronounced convictions. Our correspondent writes:

"Several years ago you published an editorial treating on the qualities that governed selection for promotion in the telegraph service. It made a distinct impression on me at the time, and I am free to say that the lesson inculcated has measurably given direction to my life. I cut out the article for preservation, but unfortunately have mislaid it. I am prompted to refer to it at this time because of a recent discussion in our office on the general subject considered in the article, to which I was a listener mostly, but it was of such a nature that I desire to ask you to again refer to the matter, if I may be permitted to do so."

In the telegraph profession, as in all others, proficiency and willingness are the elements in individual character that count. Telegraph operators showing a disposition to acquire a mastery of their business, are the ones who are going to get ahead. Those who are content, simply, with the limited knowledge, that practically restricts their usefulness to but the sending and receiving of a message, are those who are going to remain behind in the race. This fact, based on the fundamental law of ethics, deep and firm as bed rock, should be patent to every individual of even average intelligence, yet many will but glance carelessly over this article,

indifferent to the lesson it seeks to inculcate, or pass it by altogether with a sniff of disapproval. And these very men are usually those who, unwilling to take the trouble necessary for self-education in the line of their business, are apt to be the loudest in adverse criticism of the system which, as they allege, keeps them back and down, thus permitting "favoritism," as it is sometimes called, to manifest itself in the selection of others for promotion, often over the heads of older and less fortunate employees.

The general subject upon which we are now writing, and regarding which we have had of late considerable to say, is one of momentous import. It goes deep down into the life of every operator and should appeal to the best instincts of manhood, for, apart from its reflex moral aspect, on its material side it involves the vital question affecting self preservation. And self preservation, as we all know, is the first law of nature.

Now, the telegraph business with its constant expansion and wide ramifications, offers an attractive field of employment. A superficial knowledge of telegraphing is not difficult to acquire; and to the young and inexperienced the pay of a beginner seems large, and many are attracted to the key thereby. But a good operator must be made out of good stuff. He should know his business in every shade of its requirements. The routine work—the sending and receiving of messages, merely—does not necessarily constitute all the requisites demanded in a competent operator; and the pay, which at first, easily earned, seemed abundant, to the unprogressive man of maturer years, fails to measure up to his needs, and disappointment and dissatisfaction in consequence frequently fill his mind.

Yet the telegraph service holds out manifold inducements to bright, intelligent and forceful men. It has constant need of capable men to fill the positions higher up, positions that in the inevitable changes incident to such vast organizations as those of the telegraph, are constantly offering. These places, of course, require the services of men qualified by special training and broad intelligence, and the logical source of supply is from within the ranks of the operators themselves.

It is a lamentable fact, however, that these higher offices are as a rule hard to fill. It seems strange that this should be so, yet it is true. We are informed by high executive officers of both of the telegraph companies, who have themselves come up to their present positions through the various grades from that of messenger boy, and who are familiar with every department of the service, and very largely with the personnel itself, that the difficulties of finding the right men for the higher places within the gift of their respective companies is frequently exceedingly embarrassing. This is a severe arraignment and one that it should not be possible truthfully to make.

The remedy lies within the power of the operators themselves. It calls for a closer study of the technical side of telegraphy. The day has gone by for the promotion of mediocre men, and the quicker this fact is recognized the better it will be for the great operating forces of the telegraph, among whom there are vast numbers of men today, bright and naturally competent, who, if they would but apply themselves, would find the path to future preferment opening gradually before them in unexpected and gratifying measure.

It should not be forgotten that those in control of the telegraphs have risen from the lower to the higher places. It has not been accident that has placed them there. It has been accomplished by hard work, faithfully performed. They have mastered their subjects. This is what others should do if they, too, would share a like reward.

Book Review.

To issue six editions of a technical work within a period of fourteen years, is a striking testimonial of its intrinsic worth more potent almost than any expression of approval that might be evolved out of a review of the book itself. For the publication of so many distinct editions, each a costly undertaking, would not have been attempted unless warranted by demand. The call for "The Practical Management of Dynamos and Motors," as the volume in question was first denominated, has never ceased; rather has it increased with time. Yet the rapid progress of electrical engineering has brought about changes so radical that another thorough revision became necessary; hence it was that when the present edition was determined upon so large and continuous had been the sale of the preceding issues that it was believed wise to go into the new matter deeply. The present volume, out but two weeks, is the result. Its former attractiveness of material is still there. To this, however, has been added much that is new both in text and illustration, so much so, indeed, that its authors, Prof. Francis B. Crocker and Dr. S. S. Wheeler, because of its more comprehensive character determined to change the title of their volume to that of "The Management of Practical Machinery," a title more in keeping with the expansive and comprehensive scope of the rewritten book. The book now in hand offers to its readers, old and new, a most carefully prepared expression of its subject matter than which there is nothing superior extant. The telegrapher will welcome the publication, inasmuch as it affords a clear understanding of the use, care and operation of motor generators and other appliances, important adjuncts of a well equipped modern telegraph office.

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The Telegram in Statecraft.

Among its other distinctions, the Fifty-ninth Congress bids fair to be remembered as the one in which the custom of telegraphing in support of legislation reached its maximum. Not only were there never before so many messages despatched to legislators asking them to vote or act this way or that, says the New York Post, but it is not likely that there ever will be again. The truth to be faced to-day is that the magic of the telegram is losing its potency. But that fact itself cannot be fully understood except by reference to the history of Federal legislation. There was a day of simplicity—or so at least the bewailers of our ancient virtue would have us believe—when Congress was left alone with its conscience to pass the best laws it knew how. Those were days when it cost ten cents or more to send a letter; and doubtless when some distant constituent made a protest regarding a pending bill it made a good deal of an impression. Postage began to grow cheaper and letters more numerous. The law of probabilities began to operate, and the Congressional mail began to find its level—requests for jobs, requests for other favors, and advice how to vote, in fairly constant proportion. To stimulate a sudden fluctuation in this last element then became the main reliance of the seekers of legislation. Like conjurers, the heads of some organizations could by a signal send uncounted thousands of letters and postcards fluttering to Washington.

Just as soon as the lawmakers "got on" to the fact that these were not strictly spontaneous, they began to gain courage to ignore them. Then came the brief tyranny of the telegram. Senator Bailey declared recently on the floor of the Senate that he had received five hundred in a single month relating to the Smoot case alone. As to what started them, we have much evidence, as in the circular sent out by the head of a woman's organization saying that "fifty cents spent on a telegram may save the day."

A clever Frenchman has declared that the Cartesian doctrine of to-day is, "I telegraph, therefore I am." It has certainly been the prevailing philosophy of the late session. Besides the Smoot and pure-food and free-alcohol and beef-inspection telegrams, there was the famous Standard Oil series. The independent oil producers were suddenly found to be "up in arms" against the pipe-line clause of the rate bill. Every one supposed it was disinterested sentiment, when presently the mystery was solved by the publication of this letter sent out over the signature of a Standard Oil purchasing agent:

It is desired that you have a number of telegrams sent to-day and to-morrow morning to United States Senators and Congressmen, especially the latter, from as prominent oil companies or producers as you can get in their districts.
* * * I state for the information of the people that are asked to send such messages that the amendment prohibits the owners of any pipe line carrying its own production or any oil they may buy to its own refinery.
* * * From the above-stated facts you should have tele-

grams framed where the producer or producing companies realize the danger involved. It is from the important and well-known independent producing interests that you are to have these telegrams sent, if possible by people that are known by their representatives. A copy of this has gone to all superintendents. Please aid them as to parties whom they might see.

It is somewhat amusing that, while the novel forms of treatment are reserved for Congress, the old familiar tricks are still used by minor propagandists. The Times of this city was lucky enough to possess a "Constant Reader" who guilelessly enclosed with his protest against the paper's criticisms of Christian Science, the manifold note suggesting that he make such protest:

"Say that you have not seen similar attacks on other religious faiths, and that you do not feel that C. S. deserves to be picked out for attack.

"Say that you cannot put into the hands of your children a newspaper which—desirable and pleasing in every other way—attacks the religion of the family," etc.

Our contemporary had received eight letters marked "Personal" and of exactly similar tenor, before it learned the cause through this happy accident. Four came immediately after.

The game appears to be up for the present. Nobody will be either impressed or intimidated next year by avalanches of letters and telegrams. But what is to take their place? People wanting things done are certainly not going to sit supine while their servants in the Capitol do as they please. The wireless message has scarcely had a trial. How would it do to have a procession of exhausted American business men going across the Atlantic to recuperate but seized in mid-ocean with such sudden alarm lest a certain blow to home industry may fall, that they spring at once for the Marconi operator? We are not certain but that this would have greater dignity and impressiveness than the even more expensive concourse of balloons and airships which might circle around Capitol Hill, dropping petitions in their flight.

There must be something. Already the spread of the referendum is giving us a count of noses and making it harder all the time to create the illusion that the whole population of the country is clamoring for or against some particular change in the laws. The fabric of our institutions will be at least sadly frayed if every-day citizens are left to interest themselves in such measures as they please, and to write letters only when the spirit moves.

"Modern Practice of the Electric Telegraph," although not a new publication, nevertheless fully maintains its value as an excellent technical handbook for electricians, for telegraph managers and for operators. The fact that numerous editions of the book have been issued proclaims its intrinsic worth. The author, the late Franklin Leonard Pope, was a former president of the American Institute of Electrical Engineers, a member of the Institution of Electrical Engineers of London, an old-time telegrapher, and a writer of marked ability. The volume embraces 234 pages, has 185 illustrations and is fully indexed. Price, \$1.50, postpaid. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

Typewriting and Telegraphy.

Mr. F. M. McClintic, the well-known expert operator, whose contributions to current literature on the subject of telegraphy and questions collateral thereto are always of interest, has an article on "Typewriting and Telegraphy" in the June number of *Office Appliances*. We print the following extract therefrom:

"Typewriters are as much a requisite in telegraphy to-day as pens and ink were fifteen years ago. To-day the pen is a thing of the past so far as rapid telegraphy is concerned. Within a little more than a decade there has been a complete revolution in the method of handling commercial telegrams and press matter, all due to the typewriter and Phillips' Code. In 1890, when telegraphers generally began using typewriters (although they were used by many long before that), there were certain of the 'old guard' who foresaw disaster to the telegrapher if the typewriter became a fixture. They claimed it would reduce the number of operators necessary, and finally pooh-poohed the use of writing machines as a fad. Others warned the younger and more enthusiastic of the profession that they were cutting their own throats and would eventually reduce salaries by learning to 'typewrite.' But, like most good things, the typewriter came anyway. It did permit of much faster and more legible work, but it did not reduce the number of telegraphers necessary. In fact, the telegraphic business of the country increased so rapidly that the saving of time effected by the introduction of typewriters and the Phillips' Code, which came with them, made no appreciable difference, and a good telegrapher may obtain employment at the ruling rates of remuneration—such as they are—at any season of the year.

"In the old days of the gilt-edged pen operator, when such men as Thomas Edison wrote in 'copper plate,' and before the use of typewriters and Phillips' Code became a factor in handling telegrams, forty messages an hour was considered quite good; fifty was excellent, and sixty was on the verge of remarkable. In these days of hustle and get there the utmost brevity is used. Modern typewriters and 'cutting them up,' or codifying messages has made the transmission of forty per hour very ordinary; sixty an hour very good, but eighty has been maintained for hours at a time, and in some instances where manifold copies are filed (making necessary only a single transmission of the body—the address and signature taking very little time) over one hundred an hour have been recorded. In handling press despatches the possibilities for high speed are much greater, as there are abbreviations for practically all the short words, and combinations of abbreviations for groups of from two to five or six long words. Prior to 1890 press operators as a rule still used the pen and pencil and the code was not so freely handled as it is to-day, when every first-class operator has his typewriter, and men of the best ability are selected

to do the transmitting—men who can save a few seconds of time here and there by intelligent codification, and in a night's work frequently handle 20,000 words. On the Western single wire of The Associated Press, which runs from Kansas City to Denver, and on the Southern circuit from Memphis, Tenn., to the Southwest—considered two of the most rapid circuits in the world—as high as 24,000 words have been transmitted in eight hours. Such a thing would have been an utter impossibility without the aid of the typewriter and the code. Maintaining an average of 3,000 words to the hour means that, exclusive of stops caused by handling necessary 'schedules' and telegrams, and not counting 'breaks,' the sender must keep up a rate of fifty words per minute, and the men on record who can transmit over fifty words in sixty seconds without the aid of the code are less than two dozen."

Drinking by Employees Forbidden.

Consul-General Church Howe at Antwerp, reports that the use of whisky and other alcoholic beverages by Government or municipal employees during hours of service is practically prohibited in Belgium, with the result that drunkenness is rarely met with in any branch of the public service, and never among railway employees. He says:

The importance of prohibiting the use of all forms of intoxicating liquors by railway employees is not only realized in Belgium but also in the Empire of Germany, where the director-general of the railways in Alsace-Lorraine has forbidden their use by those engaged on the railways during their hours of service. This rule applies to all grades in the service, including the telegraph, and to all hours of the day. A first offense is punishable by loss of grade and the second by dismissal from the service. The measure was taken in consequence of the accidents which have grown to be rather frequent both on the railway and in the workshops.

It may be added that some of the railway companies of the United States, notably the Pennsylvania, have adopted similar strict regulations against liquor drinking by their employees. This is a regulation that might be adopted more generally with distinct advantage to all concerned, employees and employers alike. The too common practice of "taking a drink" during business hours is pernicious in the extreme, for it affects mentality and correspondingly eventually lowers the standard of work performed by the individual.

When an operator was asked recently why he favored postal telegraphy, he said it was not because he preferred government control of the telegraphs, but because he wanted to get a whack at the telegraph companies, and that was the best way he knew of doing so. The method proposed would be like spitting against the wind, as the operator would speedily find to his own detriment.

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Transatlantic Wireless Telegraph Troubles.

In the years that have elapsed since Marconi startled the world with the statement that he had transmitted a wireless message from England to America, a large amount of experimental investigation has been carried on, with the object of determining the laws which govern this most fascinating of modern discoveries. It was natural enough that, when he had proved the possibility of wireless communication over three thousand miles of ocean, even though the message consisted of a single letter ever so faintly heard at the receiver, Marconi should have supposed that for the transmission of regular commercial messages all that was required was apparatus of greater height, capacities of greater area, and the installation of sending apparatus of larger power. Costly stations were equipped on this supposition both in Cornwall, England, and on the Atlantic coast, and an actual message was transmitted from President Roosevelt to King Edward. That was in January, 1903, and in the following March the Marconi Company undertook to furnish the London Times with daily wireless dispatches from the United States. These, however, were discontinued after only a couple of dispatches had been sent, and to those who were following closely the progress of the art, it soon became evident that, although the transmission of a full message had been proved to be possible, there must be certain atmospheric or other conditions affecting transatlantic wireless telegraphy, which would have to be understood and met before it would be possible to maintain a regular service free from interruption.

Meanwhile other investigators who had been doing good work in the field of wireless telegraphy on a less ambitious scale, were beginning to turn their attention to the great problem which Marconi had so boldly attacked, and with such promising initial success; and ultimately De Forest and Fessenden established stations in which elaborate experimental work has been carried on continuously. Both of these gentlemen claim to have succeeded in establishing transoceanic communication, and Prof. Fessenden has recently broken through the reticence that has characterized investigation in this field in the past, and has contributed to the *Electrical Review*, of London, an article in which he gives a very frank statement of the work which he has accomplished, and the obstacles which must be overcome before it will be possible to establish an absolutely reliable service free from interruption. The distance between the Fessenden stations at Brant Rock, Mass., near Boston, and Machrihanish is about 3,000 miles, and under favorable conditions messages are exchanged without any difficulty. It has been found, however, that the ability to send messages varies very greatly, not only on different days, but even during different parts of the same day; and Prof. Fessenden has found that on certain days the signals received were of five hundred times great-

er intensity than other messages sent out under apparently similar conditions on other days. From this it follows that to make certain of being able to transmit messages on any day of the year, the apparatus must be built to correspond to the days of least intensity; or, in other words, a "factor of safety" of at least 500 must be adopted. The problem might be attacked, either by providing an increase of sensitiveness in the receiving apparatus, or an increase in power at the sending station, and in all probability both means will be adopted. On the other hand, if an intensity of transmission be used which is sufficient to meet the worst conditions, it may be found that on the days when conditions are favorable to transmission, such intense signals would be detrimental. Not only might they injuriously affect the operation of other stations, but they might even interfere with the station at which they were directed; for Prof. Fessenden has noticed during his transatlantic tests what he has called an "echo signal," that is, a signal coming about one-fifth of a second later than the main signal; and he believes that this second signal reaches the receiving station later because it goes the longer way around. If transmission of great intensity were used, these echo signals might become loud enough to have a confusing effect at the receiving station. Transmission conditions must be tested frequently in order to determine the proper intensity for current use, for the changes in conditions affecting transmission take place with some rapidity.

As for the causes of these rapid changes, it was pointed out some time ago by Prof. Fessenden that not only is one of the causes to be found in the action of sunlight, but that there appear to be in the atmosphere large masses of absorbing material which considerably reduce the intensity of the transmission. These masses vary in size and in the height above the sea level at which they exist. They appear to be nearer sea level in the tropics, where long-distance transmission is more difficult than in the temperate zone, and in some cases the absorption by these masses is found to be so great as to leave only about one-tenth per cent. of the energy of transmission available. Another effect of which the cause has yet to be found, is that messages at certain times can be transmitted more easily in an east and west direction than in one north and south; moreover, there are indications that diffraction takes place. It is considered that both of these effects may be due to the shifting of the position of the so-called absorbing masses, which are supposed to be the most serious obstacle to transatlantic transmission.—Scientific American.

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Telegraphers' Cramp.

"Looking through the pages of a magazine devoted to service matters, published over thirty years ago," says a writer in *St. Martins' Le Grand*, London, "I came across a paragraph which had no meaning for me when I first read it in those early days of my career, but which has acquired a very special significance since.

"It read: 'The following paragraph has recently been going the round of the papers:

"ALARMING NEWS FOR TELEGRAPHERS.

"Telegraph clerks will hear with alarm of telegraphic paralysis, a new malady reported by a French physician to the Académie des Sciences. An employee, who had been engaged in a telegraph office for nine years, found that he could not form clearly the letters U, represented by two dots and a dash; I, by two dots; and S by three dots. On trying to trace the letters his hand became stiff and cramped. He then endeavored to use his thumb alone, and this succeeded for two years, when his thumb was similarly attacked, and he subsequently tried the first and second fingers, but in two months these were also paralyzed. Finally he had recourse to the wrist, which also shortly became disabled. If he forced himself to use his hand, both hand and arm shook violently, and cerebral excitement ensued. It appears that this disorder is very common among telegraph operators.' The editor adds: "Although this malady is stated to be very common among telegraphers, we are happy to state that, in the course of our long experience, this is the first time we have heard of it."

The service was then comparatively in its infancy, having only just been transferred in a very crude and undeveloped condition from the old telegraph companies to the State; but if the editor who treated the subject with such airy skepticism be living now, he would have no difficulty in obtaining proof that the malady is very real indeed, and that a considerable number of telegraphers are disqualified for manipulating duties by it. The truth probably is that our French friends were, as usual in such matters, a little in advance of us. Nine years is, however, a most unusually short period of experience for the symptoms to appear, and the operator in this case must have been an exceptionally sensitive subject. Various causes may contribute to development: weak nerves, mental worry, a low condition of bodily health and spirits; but the chief factor is constant manipulation (or "Keying" as it is more commonly known in the service), protracted beyond the age when an operating telegrapher is at his best, which may be anything between 30 and 40, or 50 years at the outside, and when the action ceases to be a pleasure, and begins to be irksome. I staved off the evil day for years by training my left hand, and by using both hands for the work as I found most agreeable.

It is something quite distinct from what is known as "Writers Cramp," for I never found my efficiency at "reception" impaired, though this involves continuous writing, sometimes at a very rapid rate. The development is very gradual. At first only one letter may present difficulty, and that curiously enough only in particular combinations.

For example, assuming the letter V is the difficulty (in the Morse code represented by --- —) the operator may form it with perfect ease when it occurs as the first letter of a word, as in "Victoria," but may stumble when it occurs in the middle of a word, as in "reserved." The letters which presented difficulty at various times in my case were B, C, L, V, X and Z, the letter Z generally giving the most trouble.

As the malady develops, first one letter and then another presents difficulty, and what is most remarkable is, that the letters which at one time occasioned trouble may cease to do so, some fresh letter or letters, hitherto formed with ease, causing the trouble. A nerve specialist could probably explain this apparently strange phenomenon.

A great deal depends upon the physical condition of the subject, and a strong vitality may keep him going for a long time; but when the malady has reached a stage at which several letters at once present difficulty, he is in a bad case, and had better take a rest, or retire altogether from manipulative work; for the trouble has then become dangerous, the undue strain upon the nerves involved in the then painful effort to "Key" the letters expeditiously and readably causing "cerebral excitement," as stated in the paragraph quoted. The strain is thrown upon the brain, and the brain revolts.

None but those who have experienced can realize to what a condition of mental distress the complaint may reduce one, particularly under circumstances of pressure. Premature retirement, with its attendant train of miseries, seems to stare him in the face, which reflection only serves to aggravate the evil, and prolong the agony, till the inevitable breakdown follows.

Since the British-Thibetan treaty was made, the Indian Government is trying to open up the "Hermit" country to civilization and commerce. The latest news to hand is that the assistant commissioner at Kulu is proceeding to Gartok during the present month to inquire into trade matters. Under the agreement with China regarding Thibet the right to connect the trade marts with the Indian telegraph system has been recognized, so it may fairly be said that the opening up of trade between the two countries in this hitherto unexploited region commences under very encouraging auspices.

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Why the Most Up-to-Date Railroad Safety Appliances Often Fail.

Dr. Van Buren Thome, in the New York Times.

Physicians who confine their attention to brain and nerve disorders have devoted much time in recent years to the study of the results of extraordinary mental exertion as manifested in the nervous breakdown of railroad employees. Although many of the facts are obvious to the casual observer, they are none the less startling when reduced to concrete terms. More startling and of equal importance with the facts are the logical deductions. These indicate the necessity for a revision of the administrative methods of all the railway systems in the country, if life, limb and property are to be safe-guarded, beyond the limit of reasonably unavoidable accidents.

The results of investigations of the railway service by Dr. Charles H. Hughes, a St. Louis neurologist, are set forth in a comprehensive monograph which appeared in a recent number of *The Alienist and Neurologist*. He points out that the sanitary regulation of the railway service is quite as important as the subject of rates and rebates, and that the President of the United States would do well to turn his attention to the matter. The appalling accident records of the railways, he declared, are to be attributed almost entirely to mistakes resulting from the brain strain of overworked employees.

The hours of those employed in the train despatching, engineer and switch service are entirely too long, the physician declares. As the result of the enforced overtaxing of mental endurance, "cruel, criminal maimings and murders, appalling in number, have followed, and bereavements in thousands of families have resulted from this railway official crime of indifference."

The comparatively insignificant compensation in certain departments of great responsibility accentuates the injustice not only to the employee and the public, but to the owners and managers themselves.

Six consecutive hours' service for train despatchers in many stations, with compensation enough and sufficient opportunity for brain and nerve rebuilding, are most desirable if the service is to be conducted with the minimum possibility of accident. Telegraphers, engineers, and conductors are now underpaid. Dr. Hughes holds that they should receive nearly as much as is now paid to superintendents of divisions.

The contrast between the care taken in the inspection of the tracks and the running gear of trains and the lack of effort to conserve the brain power of employees is only too apparent. It is not unusual for train despatchers, conductors and engineers to work twenty-four hours at a stretch; less frequently they do a forty-eight-hour "trick," while in extraordinary cases of emergency men have been called upon to work seventy-two consecutive hours.

The pathological results of such unendurable exertions in positions of great responsibility are brain strain, paralysis, morbid conditions approaching epilepsy, true epilepsy, and nervous prostration.

"Railway employees will yet seek a remedy in the courts for these as well as the more sensible injuries to the body from accidents," says the physician, "unless railway managements become more considerate of the mental needs of their most efficient and faithful employees."

The more obvious and widely advertised results of this brain strain are the constantly recurring accidents on the railroads. Dr. Hughes recounts an instance of this which occurred recently on a Western road. After seventy-two hours' work a train despatcher fell asleep at his post. As the result of a mistake in his orders two trains met head on in a blinding snowstorm and forty persons were killed.

A train despatcher who was suffering from toothache and neuralgia asked to be excused long enough to have the tooth extracted. He was informed that if he was well enough to report for duty he was able to continue. He remained at his desk until a condition resembling epilepsy developed, and he was obliged to quit the service and lay up in a hospital. Another despatcher remained at his desk until he fell to the floor in an epileptic fit.

The enormous aggregate results of brain strain to the public and railway corporations, exclusive of the private miseries of the employees themselves, is best illustrated by a glance at the Interstate Commerce Commission's report of railroad wrecks for 1904-5:

"During the twelve months ended June 30, 1905, 886 persons were killed and 13,783 injured as the result of accidents on railroad trains in the United States," says the report. "Comparison with 1904 shows an increase of 11 killed and 4,123 injured among passengers and employees, the increase in killed being wholly among passengers, while the number of employees killed shows a decrease of 106. There were 1,231 collisions and 1,535 derailments, of which 163 collisions and 168 derailments affected passenger trains. The damage to cars, engines, and roadway by these accidents amounted to \$2,410,671."

The broken brains that send railway employees to the neurologist for help, however, are far more numerous than the wrecks which strew the tracks, says Dr. Hughes. Money and men would be saved by a more moderate and judicious running of the mental machinery which runs our railway trains. The railroads are wrecking men and blasting lives in other ways than collisions and derailments. In the opinion of the writer quoted, a run longer than twelve hours without intervening sleep is cruelly inhuman for any railway service, while an eight-hour relief all around would be nearer the daily limit of endurance of the strained brain's recuperative capacity.

The neurologist contends that the attitude of

the railway managers is wrong regarding the non-employment of men past thirty-five years of age, for the reason that the terrible brain punishment to which they are subjected earlier in life under present conditions is responsible for prematurely wrecked lives. Justice in the allotment of service will extend the age limit of capacity as far in railway service as in any other service, to the betterment of the railway interests and the better welfare of the employees and the safety of the public. Men are not born to break in brain at thirty-five if their brains are properly cared for, nor even at the extreme limit fixed by Dr. Osler. The dropping of men from the railway service at that age is an act of self-condemnation.

The exacting demands of travel service on our "lightning limiteds" and "fliers" between the large cities require an unremitting vigilance and mental tension that demand a large amount of absolutely quiet, compensatory sleep after the tension is off the strained brain. Railway service, railway safety and efficiency, and financial interests are best conserved and promoted by strong, capacious, restful, and well-rested, workable brains as they are by good tracks, good rolling stock, and good men in the directorate and higher managerial departments. This is the testimony of prudent neurologist observation. The brain must and will, in time, receive as much attention as the coarser machinery. Hitherto the medical department of the railway service has been mainly occupied with the care of the dead and the wounded after collisions, wrecks and casualties, and the legal department in minimizing accidents and damages.

The railway management is especially particular to secure perfect watches for all employees. It should be no less careful about the accurate movements of the minds and the physiological integrity of the brains in its service, for neither will run properly unless timely wound for correct movement.

"Economy of railway service at the expense of brain exhaustion is in the end destructive, unwise, and criminal extravagance of limb, life, and property," says Dr. Hughes. "Living cerebro-mental machinery driven to premature debility does not argue well for the wisdom of the present railway management system of the United States. The period of greatest utility and power in well-endowed brains and minds is from 35 to 55 or 60, and in certain exceptional organisms and in certain advisory directory positions even beyond threescore and ten. To ignore this fact or make it impossible of practical application in railway service is to abridge railway service efficiency and achieve less for the employee, bondholder, stockholder, management and patron, and less than it ought to be for humanity's sake.

"The time may not yet be ripe for restrictive sanitary legislation of the daytime service of railway employees for the conservation of their

vitality and mental endurance and power, but it will come, and with the approval of the railway management itself under the diffusion of the knowledge of the brain's rest needs and normal activity capacity, as neurologists see them."

Publishers' Press Controlled by Scripps-McRae Association.

At a special meeting of the directors of the Publishers' Press Association held at the general offices of the association, July 19, it was announced that E. W. Scripps and M. A. McRae had purchased a controlling interest in the association. J. B. Shale, president of the Publishers' Press, announced that he and T. J. Keenan, secretary of the association, had disposed of all their stock which jointly gave a control. Messrs. Shale and Keenan thereupon tendered their resignations as officers and directors. M. A. McRae, J. C. Harper and John Vandercook were elected directors to fill vacancies in the board, and the board then unanimously elected M. A. McRae president and John Vandercook secretary and general manager. Andrew McLean was retained as vice-president and treasurer.

Mr. McRae explained the relations, practically amounting to a partnership, hitherto existing between the Publishers' Press Association and the Scripps-McRae Press Association under which the latter had contributed largely to the upbuilding of the Publishers' Press. Since the original contract was made between the two associations, however, both Mr. Shale and Mr. Keenan had sold their newspaper properties and now had other very important outside interests. On the other hand the Scripps-McRae concern was more largely engaged than ever in publishing newspapers, and it was solely to secure the best possible news report for themselves and all papers associated with them that they had now extended their press association interests. He concluded by stating that the Publishers' Press would continue to be conducted along the lines which had already been successful with such improvements as could, from time to time, be made.

There are now operated as separate concerns, but under the same control, The Publishers' Press Association with 307 clients, the Scripps-McRae Press Association with 154 clients, and the Scripps News of the Pacific Coast with sixty clients, in all 521 associated newspapers, comprising, outside of The Associated Press, the only press association in the United States.

John Vandercook, the new general manager, was originally news manager of The Publishers' Press New York office, and then for six years was manager of the European service of the two associations. Later he was assistant manager of The Publishers' Press and is now editor of the Cincinnati "Post." He will make New York his residence.

Train Order Rules.*

BY CHARLES SELDEN.

Superintendent of Telegraph, Baltimore and Ohio Railroad, Baltimore, Md.

While in many instances the superintendent of telegraph has not individual charge of the operators, his interest in train-order work being thereby lessened, it is also true upon roads of comparatively small mileage, that the operators are under his immediate supervision; and on larger systems that officer is in a general sense held responsible for the conduct of the telegraph business of every character.

It seems to me that it is within the province of the superintendent to in every instance exercise a certain supervisory right which belongs to his office, and wherever he sees that rules are disobeyed, it would be right for him to call the attention of the proper officer to the same.

It may be felt by some that this would be considered as an impertinence, but from my long experience and large acquaintance among the officials of various railroads, varying in grade from chief dispatcher to general manager, I am sure this would be found an exception, and I think it proper, therefore, to bring before you a subject such as I now do.

It must be understood that I am not attempting to criticise any organization of railway people who decide upon certain methods for handling train orders. This is very far from my intention, but I do wish to call attention to the results that are brought out by practice, and to present to this body the suggestion that perchance the custom might be bettered without in any way injuring the service.

In the operating department of a railroad, whether it be a question of bridges, track, signals or train despatching, there is the well-known principle which is termed the "factor of safety," which must be considered in every movement relating to conducting transportation, and I shall attempt to follow the chronological development extending over a few years past. It was deemed best that two characters of train orders be adopted, known as the "31" and the "19" orders, respectively.

The 31 order provided that it should be made "complete" for execution only after the conductor and engineman (or the conductor alone, as the rules of the road might provide) had personally signed the same and that the dispatcher should have the signatures transmitted to him for the train to which the order was addressed before completing the order for other trains interested.

In other words, as the 31 order was addressed

to the superior train, the dispatcher having received the signatures of the conductor and engineman, or the designated parties, felt sure that this order, in accordance with the rules, had been read to the proper parties, that they thoroughly understood it and had acknowledged the same by their personal signatures. It also afforded to him the knowledge that the order had been delivered, and these, all combined, formed the "factor of safety;" and further, it protected the operator, so that in case the parties receiving the order should execute it wrongfully, and disaster occurred, the crew could not destroy their orders and successfully claim that they had not received them.

The 19 order was for the purpose of eliminating delays. It was repeated by the operator and signed for by him, and as they were not of such a character as to restrict the right of other trains, they could be delivered without receiving the signature of the conductor and engineman, and while the train was passing the station at a slow rate of speed, thus (especially in case of heavy tonnage freight trains, or upon heavy grades) saving the delay of stoppage to such trains. Failure to fulfill the 19 order on the part of the inferior train, except in cases of bad track, would not occasion disaster to it or to the other trains concerned in the movement, as the inferior train, by time card rule, was forbidden to encroach upon the rights of the superior train.

This method having been determined upon, was put in practice on a number of railroads. On roads having a comparatively small number of trains the rules could be strictly adhered to, and the personal signature of the proper employee could be had without seriously delaying a number of trains, but upon roads with a large number of trains it proved to be a decided hardship, and in the vernacular of the craft it "tied the road up."

To meet this object, a symbol "X" was agreed upon, and was termed the "X Response." It admitted of the dispatcher's sending an order to a point for the superior train and the operator either repeating the number of the order and the train to which it was addressed, or the entire order, followed by the symbol "X" and his initials.

The "X response" practically signified: "I have received Order No. for train, and will deliver the same Operator."

With this assurance on the part of the operator the rule admitted of the train dispatcher's completing the orders to inferior trains prior to their being received and receipted for by the signatures of the proper employees of the superior train.

It is quite evident that this decided change swept away the principal "factor of safety" and left only the protection to the operator, who, when he had received the signatures, transmitted them and having a copy of the order in his of-

* A paper read before the convention of the Association of Railway Telegraph Superintendents, at Denver, Col., June 20-21.

fice, if the order was wrongfully executed it could not be claimed that the operator had failed to deliver.

Later on, as I recollect, on account of some objections, the subterfuge seemed so plain that these instructions were recalled, but as the results would be as before, that the busy road would be tied up, discussion and influence was brought about to restore to the rules this "X Response," which I consider to a certain extent a "subterfuge," and so designate it.

Where the original rules tended to delay the traffic, it became rather the custom for the operator to sign the order for the employees of the superior train, or where the rules of the road provided that both conductor and engineman should sign for the orders, then either of these gentlemen was liable to sign for the other in order to save time and the traversing of a long distance from caboose or engine, as the case might be, to the telegraph office.

Some despatchers were quick-witted enough to use the 31 order without delay to trains and still keep within the rules. They did this under rule 217, though not obeying strictly the same, viz., when they put out an order for the superior train they made it a 31 order to that train in care of the operator at the point where they desired to reach the train, and having received the repetition and the signature of the operator they proceeded to move the superior trains just as if a 31 order had been signed by the conductor and engineman, or in accordance with the rules of the road.

As the time rolls on we find that the character of the 19 order is changed, in so far that while previously it was not proper to deliver a 19 order to a train, which restricted the rights of another train, it is now permissible to do so, providing the operator will stop the train and deliver the order to the proper parties thereon.

The original rules got a good many operators in trouble by reason of disobedience thereof. They would sign and transmit the signatures for the parties addressed, or would allow one party to sign for the other. They did this in order to keep in good favor with the despatcher, and when operators were plentiful a man who got in bad repute with the despatcher, simply because he would not take chances and disobey the rules, was reported to the chief despatcher in charge of the operators as being inefficient, and with a lot of small complaints against him, the chief despatcher, who was naturally biased, very frequently removed the operator on account of unsatisfactory service. Doubtless he was prone to do this because his superintendent was probably complaining about the movement of traffic under his charge, and rather than stand for that he took the chances in at least "winking" at the disobedience of the rule by the employee in his control.

We have, then, the following developments:

1. Orders to the inferior train should not be

completed until the signatures of the proper persons of the superior train had been transmitted to the despatcher. 2. A variation of the foregoing by use of an "X response." 3. A still further variation by the right to use a 19 order restricting the rights of trains, providing the train be stopped and the order delivered to those addressed in person.

It seems to me that there was hardly ever a clearer case of "beating the devil around the stump" than this. What does it all amount to? Principally this: That we supply a rule with a large "factor of safety," which delays traffic, and that we then begin by degrees to back away from the rule, lessening the factor of safety and lessening the delay. Furthermore, "X response" or no "X response," as the case may be, when you depart from the first set rule, which does not permit of the movement of inferior trains prior to the order having been signed for by the proper persons of the superior train, we are entirely and solely in the hands of the operator, upon whom we depend to deliver the order. This being granted, why not sweep away this apparently superficial and round-about clearance that has been arranged for in existing rules?

It used to be the fashion to put upon the time card rules which all of us know could not be carried out and railroads successfully operated. They were placed there in many instances for court uses, and at times they came in for good, but the courts of this date are apparently closer to the tide of current events than previously, and in cases of suit the lawyers are very apt to be coached by an expert, and the paper fabric which we have built falls like a house of cards.

Why not let us suggest that we acknowledge the fact that the party to deliver the order is the one upon whom we depend; furnish that party all of the proper devices to warn a train and to cause it to come to a stop, but send the order to that train in the care of the operator, at his repetition make the order complete and move the other trains in accordance?

It seems to me that in such an arrangement we are out in the open, and authorize by rule what we are doing every day. It takes away from operators, despatchers and trainmen the inclination to disobey rules and take chances in order that they may gain time.

It may be said that this is a matter with which this association should have nothing to do, but I do not feel that this is so. I feel that every member here in his capacity in charge of operators is to a greater or less extent responsible for the results. Some may say: "Well, if I should suggest that to my superior officer he would laugh at me, but I am prone to think that if he did, it would be because of one of two things, either his ignorance or yours."

If you do not take enough interest in the most important matter that the telegraph line of a railroad has to do with, whether you figure that you are concerned therein or not, or that your

efforts might meet with repulse, I think you are making a very great mistake. I think you owe it to yourselves as superintendents of telegraph. I think you owe it to the operators who are more or less in your charge, and to the interest of the road which you serve.

Now, if you are not taking any interest, if you do not examine train rules, but are simply satisfied to look after the electrical portion of your duties, I feel the superintendent might not give very great weight to anything that you might offer in this line; yet I also feel sure of another thing, and that is that ninety-nine per cent. of the operating officials in the United States will be glad to impart to you knowledge if you will ask for it, and if they find that you have it they will be glad to discuss matters of this character, because their success, as well as yours, depends upon the success of the road whose interests are with you to a degree, as well as with him.

The Woes of the Messenger Boy.

A solution of the servant girl problem was discovered a few days since by a bright New York woman. When her maid failed to appear she called up a branch office of the Postal Telegraph-Cable Company and ordered a messenger boy to be sent to her address.

A boy was immediately sent, and, much to his surprise, upon his arrival at the address given him, was set to work in the house.

The boy, unused to such work, was heartily glad when his temporary duties as maid of all work came to an end.

"Gee," he confided to his fellow messengers on his return to the office. "Say, fellers, never go doing stunts like I did this morning. It's no cinch. When it comes to doing housework again it's 23 for mine."

And his fellow workers chorused their approval, declaring they had no desire to solve the servant girl problem at the rate of 20 cents an hour.

A. D. T. No. 82, whose name in private life is Bobby Simms, reported to Manager Chas. Smith, of the Western Union Telegraph Company, Louisville, Ky., that things had been breaking bad for him and that he was just about ready to throw up his job.

"Can you catch flies?" demanded an elderly woman on East Oak street, when Bobby responded to a call. Bobby said that he thought he could, and the lady replied:

"Then, catch some."

At the end of an hour the lad had succeeded in annexing one squashed and legless fly.

"Oh, my," half sobbed the lady, "that will never do. Billy will eat only fat ones. Here."

So saying, she wrote a note and directed the boy to take it to Al Kolb's saloon and give it to Billy Repetto, the barkeeper.

"Please let the bearer catch some flies," the note read.

Billy, who used to catch flies in Italy, helped Simms scoop up a teacup full of the boozy insects that had been imbibing free beer on the counter.

"Mercy!" shrieked the lady when No. 82 came back with his spoil, "Bill could never eat those. They have been fattened on beer, and Bill is so delicate. Besides, he's sick."

"So am I," growled Bobby. "Here's where I tie a can to myself. Who is Bill—a bird?"

"No; he's my pet lizard," explained the lady. She had Bobby to summon a veterinary surgeon for Bill before she would pay him off.

The horse doctor came and looked Bill over. As he was not suffering with quartercrack, farcy, heaves, bots, cribbing, windgalls, spavin or other kindred ills that horseflesh is heir to, he said that he could do nothing for Bill and declined the case.

A. D. T. No. 519, whose legal name is Joseph White, but who is known in the Chicago messenger service as "Slats," is burning with professional indignation because he was called by a portly guest of the Grand Pacific Hotel and forced to scratch the guest's back for an hour and a half.

"I get's the call to the big hotel across the street, and the clerk says, 'Up in 29, kid,' and I hikes up to the room and butts in. A big man was sitting in a chair by the window copping all the breeze.

"How are you on scratching backs,' sez he.

"What's dat?" sez I, quick like.

"I want you to scratch my back,' he says. 'I can't reach around and it's too warm to rub against the door.'

"He had off his vest and I went over and began to rub between his shoulders.

"Over to the other side,' he says. 'Now down a little—that's the place,' he kept saying.

"Let's see your hands,' he says, and I holds 'em up.

"Better get the hairbrush,' he says, and I get the brush and rubbed him up and down the back for more than an hour.

"After a while he says, 'That will do, bub,' and hands me a dollar and I skiddooed."

Cultivate Men of Purpose.

The late Marshall Field said: "The business world is full of young men content in simply putting in their time somehow and drawing their salaries, making no effort whatever to increase their efficiency and thereby enhance their own as well as their employer's interest. To every young man I would say, seek at the start to cultivate the acquaintance of those only whose contact and influence will kindle high purposes, as I regard the building up of a sterling character one of the fundamental principles of true success."

An Improved Pneumatic Tube System.

A new system of pneumatic tube operation has been introduced and recently installed for the Postal Telegraph-Cable Company, between the Cotton and Produce Exchanges and between the two exchanges and the Commercial Cable Company's building at 20 Broad street, in New York, and with the main office of the company at 253 Broadway. It has heretofore been the usual practice in the operation of such systems, says the Engineering Record, to maintain the pressure supply in storage tanks, which are drawn from as needed for the despatch of carriers. This system requires extensive pumping and air storage equipments, but in the new system special automatic blowing equipments are used which deliver air directly into the tube, but only intermittently, when needed, thus doing away with reservoir storage. This improvement involves the automatic starting and stopping of the blower every time a carrier is despatched through the tube, for which purpose an interesting type of motor-driven blower with automatic control mechanism has been devised.

The new pneumatic line on which this system is being used has $2\frac{1}{4}$ -inch tubes to each point, over 15,000 feet in all, the carrier traveling in one direction only in each tube. The lines have many sharp turns and bends owing to the complication of underground conduits and pipes to be avoided in the street, and the necessity of passing up through the available locations in the basements of buildings to the operating heads, there being as many as fourteen right-angle bends at one end. For the operation of the lines there is a special intermittent blowing equipment at either end, which is permanently connected to one tube, although connections and despatching heads have been so arranged at both ends of either tube that changes may easily be made for despatching in either direction in either tube, or in case of disablement of either tube, of operating in both directions in the remaining tube. The scheme of operation embraces, in general, the use for every tube, of a blower equipment at the sending end with control apparatus in the tube head, so arranged as to start the motor automatically when the carrier is inserted and the head closed, and further automatic means for stopping the motor after the carrier has been delivered at the opposite end.

Each tube is fitted at either end with an operating head which enables it to be used for despatch in either direction, the equipment consisting of a despatch head and a receiving gooseneck and basket, either of which may be connected to the tube.

In operation the carrier is inserted into one of the valve tubes, and the air-tight door on the head closed down on it, which operation closes concealed electrical contacts within the box. This starts the blower motor and at the same time electrically locks the air-tight cover down over the

tube, causing the air pressure to force the carrier to the other end of the tube. This air-tight door is released after the carrier is delivered from the other end of the tube. This is done by a time-element mechanism connected to the motor, by which it is closed down after having operated for a predetermined number of revolutions. It has been found as a result of experience that the despatch of a carrier through a tube 1,500 feet in length requires only about 25 seconds, the greater part of which time is consumed in passing the large number of bends beneath the street and up through basements and partitions in the buildings. The motors are therefore set to operate continuously for some thirty seconds after they are once started, which time is enough to deliver the carrier at the other end with enough reserve to prevent the carrier becoming stalled in the line due to the motor shutting down too early.

The motor-control mechanism is one of the most interesting features of the new equipment, consisting essentially of a motor-starting solenoid and two time-limit relays, the purpose of which is to shut off the motor after it has operated a predetermined number of revolutions.

An interesting feature of this system is that carriers may be despatched in a tube from a sending station one after another continuously and with any desired degree of rapidity without hampering the operation of the system, in contradistinction to the necessity of waiting until a carrier has been transmitted to the other end and delivered from the tube before inserting another. This is made possible by the duplication of inserting doors and tube valves in the sending boxes, and of the time-limit mechanisms upon the blower outfit control boards. The arrangement of operating circuits of the electric door locks, motor-control and time-limit mechanisms is such that when a carrier is despatched through one of the air-tight sending doors, that door only is locked and one of the time-limit mechanisms only is set into operation, the escape of air pressure through the other sending door which is unlocked, being prevented by a hinged flapper valve in the Siamese or Y-connection beneath the inserting tubes.

This interesting system was designed by Mr. John T. Needham, district electrician, and Mr. J. F. Skirrow, associate electrical engineer of the Postal Telegraph-Cable Company. The entire equipment was built by the Electro-Pneumatic Tube Company, New York.

Orders, if sent to Telegraph Age, Book Department for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

TELEGRAPH AGE is the only telegraphic newspaper published in America. It is up to date, covering its subject thoroughly, and no telegraph official or operator, can afford to be without it.

Some Valuable Telegraph Books.

All of the books described in the following list embody a choice number from which selections may advantageously be made, and furnishes an excellent catalogue for the consideration of telegraphers. Any book named will be sent upon receipt of price to any address, carrying charges prepaid. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

POCKET EDITION OF DIAGRAMS.

"Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students" is acknowledged on all sides to be the standard work of the telegraph. Speaking strictly within bounds, it is not too much to say that this volume presents the finest study of the complex subject of the telegraph ever attempted. There is no other book like it or even approaching it, in thoroughness, comprehensiveness, or in original detail of statement. The author, Willis H. Jones, is a practical telegrapher himself—an engineer in his profession of recognized ability, who knows exactly what other telegraphers want to know, and has the faculty of imparting that knowledge in a manner at once so clear, so simple, so bright, so entertaining, so free from needless technicalities, that his readers, even the least informed among them, readily understand his meaning. The helpful qualities of the work will be clearly manifest alike to the beginner, to the student, to the operator and to all telegraphers whether in the commercial or in the railroad service.

"Pocket Diagrams" does not deal in theory; it is packed full from cover to cover of the common sense of telegraphy, the side against which the ordinary every day operator runs up against, and respecting which he desires information of the kind that will aid, not mystify, him. The book contains 334 pages, and has 160 splendid diagrams. It has the unqualified endorsement of telegraphers everywhere.

The price of Pocket Edition of Diagrams, etc., is \$1.50.

PHILLIPS CODE.

The popularity of the Phillips Code, by Walter P. Phillips, was never more apparent than at the present time. Its acceptance by the telegraphic fraternity, as a standard work of the kind, dates from its first publication, and the constantly increasing demand for this unique and thoroughly tested method of shorthand arranged for telegraphic purposes, has necessitated from time to time the issuance of several editions. The present edition was carefully gone over under the supervision of Mr. A. P. Velie, an expert press and code operator, for many years identified with The Associated Press, New York, a few revisions made and a number of contractions added, until now this "staunch friend of the telegrapher" is strictly up-to-date in every particular. It has been declared that an essential qualification of a "first-class operator" was a thorough understanding of Phillips Code.

Many expert code operators have examined the revised edition of this code, and all unite in pronouncing it revised. Mr. George W. Conkling, who has won the championship for sending code in many tournaments, says:

"I have examined thoroughly the additions contained in the latest edition of the Phillips Code and most heartily approve of them. Every operator who is familiar with the code should find no difficulty in mastering the new contractions, as they 'fit in' smoothly and I think the ground has been entirely covered."

The price of the book is \$1 per copy.

"Telegraphers of To-day," illustrating the personnel of the telegraphic profession with more than 900 biographical and historical sketches of leading members of the craft, is a unique and valuable work; it has become standard, being the only work of the kind extant. It contains 354 double column pages, 7 by 11 inches in size, has gilt edges and is bound in imitation Morocco—altogether a handsome volume.

Of this fine publication, becoming more and more valuable as time passes, we have but a few copies left. The original price was \$5. In order to readily dispose of these remaining volumes, and place them where they rightfully belong, in the hands of every telegrapher who failed to secure a copy at the higher original price, we have cut the

figure to \$1 a volume. On receipt of this amount the book will be sent to any address, express charges to be paid by the purchaser. At this low rate, a sum below the cost of binding the book, no telegrapher who desires to own a copy should fail to obtain one at this time, for this "bargain" price will probably never be repeated.

"The Quadruplex," by William Maver, Jr., and M. M. Davis, still holds its own as a work of authority in its treatment of its subject. A clear analysis of that system of telegraphy is afforded and telegraphers have constant need of the book. There are 128 pages in the volume and 63 illustrations; price, \$1.50.

The life of Prof. S. F. B. Morse, the standard work, authorized by the Morse family, and compiled from original papers and other authentic data in their sole possession. It is a clearly written biography, charmingly told by a trained newspaper man, a close personal friend, and presents the life of this great inventor of the telegraph in a broader, more intense, human and truthful attitude than ever before attempted or even possible; 775 pages, illustrated; sheepskin binding. The original price was \$6, which we have reduced to \$3, on receipt of which the book will be sent, express charges prepaid.

"The Telegraph in America," by the late James D. Reid, the "father of the telegraph," furnishes an authentic and complete history of the telegraph, tracing out its early start, its development, the organization of the various telegraph and cable companies, etc. The book is bound in full Russia, has 846 pages and is abundantly illustrated; a magnificent gift to any telegrapher. There are now but a few copies left of this great work and when these are gone the work will be out of print. The original price was \$7, but as the covers are a little shopworn the price has been reduced to \$5.

"Sketches Old and New," by Walter P. Phillips, is a handsomely bound volume of 164 pages of interesting and charmingly told telegraph stories; one of the very best works of the kind ever published and which will appeal strongly to every telegrapher; price, \$1.

"Lightning Flashes and Electric Dashes," a book made up of bright, ably written stories and sketches, telegraphic and electrical, that should find a place in the home of every telegrapher; 160 large double-column pages; profusely illustrated; price, \$1.50.

Old Timers' Souvenir—Miniature Legless Key. This is a beautiful emblem for operators; an attractive charm for the watch chain; a perfect duplicate in every detail of the celebrated miniature steel lever telegraph key that attracted so much attention and which was distributed as a souvenir at the banquet of the Old Time Telegraphers' and Historical Association at the Waldorf-Astoria, New York, August 31, 1905. It has a French lacquered body and nickel-plated lever. Price, by registered mail, prepaid, \$1.50.

"The Practical Management of Dynamos and Motors," by F. B. Crocker and S. S. Wheeler, as indicated by its title, affords a clear understanding of the use, care and operation of these important adjuncts of the well equipped modern telegraph office. There is a constant demand for this book, for telegraphers find it an invaluable addition to their working library. There are 206 pages, and 99 illustrations; price, \$1.

"Electrical Instruments and Testing" is the title of a new volume by that industrious and excellent writer on such subjects, Norman H. Schneider. This book treats of the use of the voltmeter, ammeter, galvanometer, potentiometer, ohmmeter and the Wheatstone bridge. The explanations are practical, given with numerous worked out examples, fully illustrated with diagrams and drawings. The book is intended for practical, everyday use, and also as an introduction to the larger works on electrical testing. The apparatus described is modern and such as is generally employed. The volume is well printed on plate paper, contains 199 pages, including a fine index, and there are eleven chapters and 105 illustrations. The price is \$1; bound in cloth.

San Francisco Associated Press Men at Oakland

The world has marveled at the completeness of the story of the San Francisco calamity as told by The Associated Press service, but few know what heroism was required to enable the men to tell the stories which interested not only this country but the entire world.

Bit by bit information has been gained which shows that the devotion to duty of a little group of newspaper telegraph men accounted for the knowledge of a situation of which millions of people were breathlessly waiting to hear.

Tales were told of the heroic firemen and soldiers, of the brave nurse, priest and doctor, of

Press with news. Yet in twenty-four hours Paul Cowles, superintendent of the Western division, and his staff sent out 21,300 words, and within forty-eight hours they were supplying news to the local paper.

The pictures of some of the members of the staff of The Associated Press at San Francisco are shown in the accompanying engraving.

The Royal Marriage at Madrid.

An Associated Press correspondent has this to say regarding the telegraph service in Spain, as exemplified at the time of the recent marriage of the King:



J. M. Carroll, Editor. F. E. Burnell, Opr. Karl von Wiegand. W. F. Lynch. H. H. Macdonald. Ben. McInerney, Opr. W. R. Mitchell, Opr.
H. Collins, Opr. Editor. Opr. Editor.
Messenger. J. K. Brown, Opr. John Finlay, Editor. E. C. Johnson, Editor. E. E. Curtis, Editor. R. E. Geistlich, Chief Opr.

the self-sacrificing mother and courageous father, but the story of the newspaper men who risked their lives that the world might be kept informed of the catastrophe has yet to be told. It will probably never appear in detail, though if all the facts were known it would be a thrilling recital which might silence the nagging of those individuals who seem to think that the end and aim of the existence of a newspaper man is to wield the muckrake for the edification of scavengers. They might find that a reporter has brain and brawn; that he is actuated by a sense of duty; that he is compassionate and merciful.

On the fateful 18th of April, as all the world knows, the telegraph and telephone systems connecting San Francisco with the outside world were destroyed. So were the plants of the newspapers that usually furnished The Associated

"The Spanish Minister of Telegraphs took special interest in The Associated Press, and did all he could to facilitate our work, but the Spanish telegraph facilities at best are most primitive. There is only one office in Madrid, with one small window for receiving despatches, and one receiving clerk, who laboriously counts the words while a mass of people struggle to receive attention. At another window revenue stamps are sold and each despatch must bear sufficient stamps to cover the transmission charges, plus a government tax of ten centimos per message. Also each despatch must be accompanied by a long form, made out in much detail.

"Eighteen pieces of advance matter, aggregating about 6,500 words, were prepared, covering descriptions of buildings, palaces, church, gala coaches, bull-ring, trousseau, programmes,

etc., and every detail which could be properly prepared in advance. Through the state department at Washington and the American Minister at Madrid, Mr. Collier, the fullest facilities were secured for all the main events, including the marriage ceremony at the church, where the admission was much restricted.

"After all the most important event was the bomb throwing. I reached the scene of the explosion a few minutes after it had occurred, while the bodies were being carried off, and all of our matter is the result of personal observation, on the scene, in the hospitals, prisons, etc. A strict censorship was imposed at once, and occasioned great difficulty. A serious question arose about dividing time between the scenes, preparing copy, getting it off by the panic-stricken telegraph office and by couriers to the French frontier. Every possible obstacle seemed to be put in our way. The sale of telegraph stamps was suspended, but fortunately we had a good stock on hand. As an additional safeguard I telegraphed London and Paris to supplement our service, in case the direct despatches should be held up. There was a terrible glut of despatches, and everything seemed to be going by chance, but I established personal relations with the telegraph chiefs and operators which I think were serviceable. The London Times, which had four men, did not get through a single word, either on the marriage or the explosion; nor did the London Standard. The London Times man, who was doing the story brought in large foolscap sheets, closely written, at 11 P.M., and filed his whole story in a lump, with the result that it never moved until the next day. Ours was cut into small takes, each numbered and timed, so that the whole was easily assembled, and in this way most of it got through, although the censors butchered it considerably. The service on the day of the marriage and explosion consisted of thirty-four despatches, of which twenty-three were bulletins, some in code and many urgent, and eleven sketch despatches. The service started at 7 A.M. and was finished at 10.30 P.M.

"When it appeared that all despatches might be suppressed a courier service to the French frontier was organized. The first courier left at 8.55 P.M. with 500 words to be filed at the French frontier town of Hendaye. The next night another courier carried 1,350 words to Hendaye. But inquiry through Paris to New York disclosed the fact that our service was going through, and it was therefore found unnecessary to transmit this matter."

Edison Iron-Nickel Storage Battery.

Very general mention has been made of the issuance of a patent to Thomas A. Edison for a form of iron-nickel storage battery. In fact, so much has been said concerning the Edison storage battery and its possibilities, says the Western Electrician, that the opportunity is here taken to give

a brief description of the battery, as improved by this later patent.

The invention relates to improvements in storage batteries of the type wherein the active materials containing, respectively, nickel and iron, are maintained under pressure in small pockets or receptacles made of perforated sheet metal and held in position in suitable grids.

In practice, Mr. Edison found that, bulk for bulk, finely divided iron obtained by reducing ferric oxide is much more active electrolytically than the nickel hydroxide that he has so far been able to obtain commercially. Consequently to present the best combination for practical use the bulk of iron used need be only half that of the nickel.

If the attempt is made to employ pockets of nickel twice the capacity of the iron pockets the surface in contact with the metal walls is not large enough to provide for the proper discharge rate. Furthermore, such an arrangement would be undesirable commercially, for the reason that it would necessitate the employment of widely different machines for manufacturing and assembling the nickel and iron grids and also because the great bulk of nickel used would necessitate pockets of prohibitively thick metal in order to accommodate the swelling; and, finally, because with a thick mass of nickel the proper circulation of the electrolyte could not be secured.

By making the pockets for the nickel of substantially the same size as those for the iron and by using twice as many nickel grids as iron grids a practically useful combination is secured. Furthermore, the space between the adjacent nickel pockets provides for opportunity for any swelling to take place. Heretofore in the construction of the battery Mr. Edison has employed insulating separators between the several grids; but he finds that these separators are not necessary between the adjacent nickel grids, which may therefore be allowed to swell so as to touch each other without affecting the circulation of the electrolyte or the general operation of the battery. A saving is thus effected in lateral space, and the objections due to swelling of the active materials, and particularly the nickel hydroxide, are reduced.

Imperial Telegraphy.

On the motion of a Montreal gentleman, the congress of the Chambers of Commerce, in session in London last week, decided to request the Imperial Government to devise means whereby all cable and telegraph news to and from all parts of the empire be furnished entirely through imperial channels. The remarkable statement is made that this proposition was unanimously carried. Perhaps it was thus carried as the easiest way to dispose of it. The British government has great responsibilities on its shoulders, and it is not likely to go into the business of furnishing and distributing news to all quarters of the globe.—St. John (N. B.) Globe.

Col. P. H. Fall as a Confederate Military Telegrapher.

The New Orleans Picayune recently published a communication received from a correspondent, a comrade of Col. Philip H. Fall, in which was recounted with considerable interesting detail the part Col. Fall took in behalf of the Confederacy, as a military telegrapher, during the Civil War. It will be remembered that Col. Fall is a member of the operating staff of the Western Union Telegraph Company at Houston, Tex., a member of the Old Time Telegraphers' and Historical Association, and a frequent visitor at its annual reunions. We quote from the article as follows:

In your Confederate Reunion edition I note the photograph of Colonel Philip H. Fall, colonel and aide-de-camp on the staff of General Stephen D. Lee, commanding the United Confederate Veterans.

I knew Phil when he was a boy going to Sayer's military institute at Frankfort, Ky., and afterward to Franklin college, Nashville, Tenn., from which institution he was suspended because of assisting a roommate in stealing a young lady from Minerva institute. He never returned to college, but floated down to Vicksburg, and, the war coming on, he enlisted in the Vicksburg Southrons, but was soon ordered by General M. L. Smith, commanding that place, to go across the river opposite that city and take charge of a telegraph line running up to Lake Providence.

Then follows a reference to the spirited action of Col. Fall, Christmas Eve, 1862, in advising Gen. Smith of the approach of Gen. Sherman, information that enabled the Confederate forces to successfully oppose Sherman in his advance on Vicksburg.

It is said and thought by many officers of the Confederacy that but for Fall's information the Confederacy would have fallen two years earlier than it did, as the Confederacy finally crumbled to pieces soon after Vicksburg's capture.

Colonel Fall is the oldest telegraph man in point of service in the Western Union Telegraph Company in Texas. He is called the daddy of operators. He has been a resident of Houston sixty-three years, except when off at college and east of the Mississippi in the service of the Confederacy. He was General Van Dorn's operator for a long while, and did valiant service for the Southern cause.

In three more years, should he live, he will have been with the Western Union fifty years, but does not expect a pension, and his only ambition is to die in harness.

Regulating Telegraph Rates in Virginia.

The Corporation Commission of Virginia has just completed an order prescribing rates and charges for all telegrams sent or received between points in that state, and has served the order on the Western Union and Postal Telegraph-Cable companies.

The paper served on the telegraph companies is as follows:

Commonwealth of Virginia.

Department of the State Corporation Commission
Richmond, Va., June 30, 1906.

To the Western Union Telegraph Company and
the Postal Telegraph-Cable Company:

Take notice, That the State Corporation Com-

mission will, at its offices in the state capitol building, in the city of Richmond, Va., on Tuesday, the 17th day of July, 1906, at 11 o'clock in the morning, in accordance with authority conferred by the Constitution of Virginia and the statutes enacted by the General Assembly of Virginia, pursuant thereto, consider and hear any and all objections which may be offered and made against proposed rules, orders and requirements of the commission, whereby rates and charges for the transmission of telegraphic messages by your company and over your lines, respectively, in the State of Virginia, will be fixed and prescribed as follows:

Except as may be otherwise specially provided, a telegraph company shall not collect more than twenty-five cents for its service in transmitting any message of ten words or less, exclusive of date, address and signature, between any two points within this state, nor more than two cents for each additional word of a day message, nor more than one cent for each additional word of a night message; and no additional charge shall be made for repeating a message.

Messages shall be received for transmission and be delivered at destination, as now provided by statutes until other provision is made therefor.

At the said hearing and consideration of the foregoing matters, the method and time of promulgating and putting into effect the rules and regulations relating to the rates and charges for the transmission of telegraphic messages, and of the regulations in connection therewith, will be heard and determined by the commission.

Beverley T. Crump, H. C. Stuart, Jos. E. Willard, commissioners.

The hearing was held on July 17, as mentioned, but was continued over until August 1, in order to give the telegraph companies time to prepare data on the matter.

Officials of the companies state that if the new schedule of rates proposed by the commission was put into effect the companies would be forced to quit business in Virginia.

United States Consul J. C. McNally, of Liege, writes that Belgium has a very good government telegraph and telephone service. The inland telegraph rates are ten cents for fifteen words, twelve cents for sixteen to twenty words, and fourteen cents for twenty-one to twenty-five words. These charges, of course, are exclusive of the extra toll demanded for the name and address and for the signature of the sender, a charge always made by Government controlled telegraph systems. From a telegraphic standpoint, therefore, the charges are as a matter of fact, compared with those of America, high, especially when the size of the country is taken into consideration, Belgium being one of the smallest countries in the world.

You can't afford to be without TELEGRAPH AGE; \$1.50 a year.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

Must be Sold.—A splendid Yetman typewriter and an up-to-date No. 2 Remington; cash or easy payments. Make me offers. D. Good, agent for all makes of typewriters. Western Union Telegraph office, 15th and Chestnut streets, Philadelphia, Pa.

PHILADELPHIA, WESTERN UNION.

The death recently of the wife of George Uber, of this office, after undergoing an operation, reveals a sad case, and many expressions of sympathy for Mr. Uber are heard.

Mr. Joseph Slater of the superintendent's office, who was successfully operated on several months ago for appendicitis, is ill with typhoid fever and again an inmate of the same hospital which he left not long ago.

Mr. Thomas Murphy, another member of the superintendent's office, is rejoicing in the birth of another son.

Mr. Joseph Greene, the veteran and grand old man of this office, who has served the telegraph nearly sixty years, is on leave of absence for a month on account of failing eyesight.

NEW YORK, WESTERN UNION.

The first outing of the employees of the Central cable office, 16 Broad street, was held at Rockland Lake Park, above Nyack, N. Y., on July 8. A special car to destination was furnished by the West Shore Railroad Company. The features of the programme of entertainment were boat races, running races, an old-fashioned country dinner, singing, speeches, a baseball game and dancing. Prizes were awarded in the boat and running races, the Canadian operators in the cable office winning all the prizes for fast rowing. A permanent organization was effected, to be known as "The Cable Office Social Club," and the next outing is scheduled for August 26.

Mr. W. B. Richardson, repeater chief, has resigned to accept a position with a broker at Duluth, Minn.

The home of Mr. Gardner Irving, manager of the Commercial News Department, at Hastings-on-the-Hudson, was struck by lightning during a recent terrific thunder storm. Some damage was done to the house, but fortunately none of

the family or friends who were stopping with him were injured.

Mrs. May, traffic chief, city line, and Mr. Thomas M. Brennan, are both absent on vacation. Miss Emily C. Finn has gone to Narragansett Pier, R. I., to be absent a month.

Mr. R. Uth has resumed work after a brief illness.

The veteran Mr. Herbert Gilbert, formerly manager for the Western Union at the Produce Exchange, and later of this department, was a recent visitor.

Mr. F. N. Plain has been assigned to the Southwestern switch.

Mr. Dennis S. Sullivan of the Eastern division is still absent because of illness; another absentee due to sickness being B. H. Chrystie.

NEW YORK, POSTAL.

Postal operators feel proud of the showing made by their associates at the Boston tournament. The loving cups presented by Clarence H. Mackay and Andrew Carnegie were placed on view on Manager Norton's desk, where they attracted much attention and elicited much favorable comment.

Joseph J. Keegan, for twenty years manager of the branch office at 535 Broadway, fell from a Broadway car on the morning of July 12, when near his office, and fractured the base of his skull. Mr. Keegan was on the end of a seat, and was seen to lurch forward and fall. The car was going at a moderate rate of speed when the accident occurred. Mr. Keegan, who is a large man physically, weighing over 200 pounds, is in the hospital, and has not yet regained consciousness.

Among late accessions to the operating force are: C. E. Holland, W. Lysaght, J. W. Anderson, J. P. Conklin, J. J. Lawler and H. W. Mayfield.

Rufus Brooks Burritt, formerly of this office, died at Lyndhurst, N. J., July 11, aged sixty-one years. He was a native of Hackettstown, N. J. At one time he served the Western Union Telegraph Company on the old Produce Exchange, New York, afterwards being manager at the same place for the Baltimore and Ohio Telegraph Company. He retired from active service about four years ago, because of declining health.

OTHER NEW YORK ITEMS.

Mr. Albert Macdonald, a telegrapher of Adelaide, South Australia, a man of fine intelligence and particularly well informed respecting the telegraph in his native land, is in New York on a six months' leave of absence, where he is looking after private interests and making, incidentally, a study of the telegraph in this country, where he will remain yet several weeks before starting for his home, going thither via London. That he is well thought of at home may be accepted by the following taken from "The Transmitter" of April 18, the Australian telegraph paper:

By the Melbourne express on the 10th inst., Mr. A. Macdonald, telegrapher, Adelaide, left to join the

Miowera at Sydney en route to America. He has secured his long service leave, and will be absent about six months, the objective being New York, via Vancouver, and overland. Mr. Macdonald will be sadly missed from the operating room by a very large circle of friends, both as a man, genial and straight, and as a fountain head of concrete ideas and shrewd opinions. As an expert and strenuous telegrapher he will be missed, especially in these busy times, by the managerial staff. On Tuesday evening, the 8th inst., he was met in the check office by a group of friends, who wished him Godspeed, and presented him, through Mr. A. Hiscock, with a traveling bag and a silver-mounted wallet, as a small token of the esteem in which they held him.

Mr. Ewell D. Moore, chief operator for The Associated Press, at Los Angeles, Cal., was visiting friends in New York recently.

Charles E. Gray, aged forty-nine years, a member of the Western Union telegraph staff in the "Sun" office, New York, for the past eighteen years, died on July 19, at his home in Brooklyn.

Hon. A. A. Rich, counsel for New Jersey of the Serial Building Loan and Savings Institution since its organization over twenty years ago, died at his home in West Hoboken, N. J., on July 11. He was well and favorably known to the telegraph fraternity in New York and vicinity.

Assessments Nos. 451 and 452 have been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of Howard L. Goodman, at Philadelphia, Pa.; Frank Crummett, at Meadowbrook, N.Y.; George

G. Small, at Brooklyn, N. Y.; E. H. Neff, at Los Angeles, Cal.; J. N. Applebaugh, at New York; George F. Fagan, at Brooklyn, N. Y., and Clarence H. Bookhout at Las Vegas, N. Mex.

An Interesting Experiment in Recharging Dry Cells.

Every now and then some enthusiastic thinker or untiring experimenter hits upon or tries the interesting experiment of recharging dry cells. If dry cells were made in small quantities and sold at a high price, such a proceeding might be called sensible, but generally it is worse than a waste of time and energy.

In a recent issue of a popular journal an experiment of this kind is described, the experimenter being pleased to find that after a few minutes' charge his cells would give "a fairly strong current." Naturally, if a short charge accomplished some wonderful results, a longer charge produced still better ones, so he proceeded to continue the work of charging, and was somewhat chagrined, after several hours, to find that his cells had gone all to pieces. He was not, however, one who was easily discouraged, for he immediately procured a new lot of batteries and started over again to see why the trouble had happened. This time the charge was stopped before the batteries had gone to pieces, and after removing the belt from the small generator used in charging, a surprising thing happened: the generator ran as a motor in the same direction, instead of turning in the opposite way. The explanation of this peculiar behavior is that "the current from the batteries reversed the field of the generator, and also the armature, thus making two reverses, which is the same as none at all." What about the reversal of functions which takes place when changing a dynamo to a motor?—New York Electrical Review.

For Sale.—Yetman transmitting typewriter, practically new; price \$50. Owner having left telegraph business has no further use for same. For particulars address Transmitter, care TELEGRAPH AGE, New York.

For Sale.—A new Yetman transmitting typewriter; practically has never been used; \$70. W. C. Graves, 210 Girard Trust Building, Philadelphia, Pa.

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There is only one cheapest form of battery energy, the Edison Cell. Two ampere hours cost one-half cent or less.

The Edison Cell is the lightest form of battery energy. It "has a capacity of work per unit weight greater than any other, either primary or secondary." The energy of an Edison Cell applied through a perfect motor would raise the cell 16.17 miles.

The Edison Primary Battery gives rise to no fumes, the liquid does not corrode machinery, there is no creeping of salts and the cells do not freeze in ordinary cold weather nor dry out in hot weather.

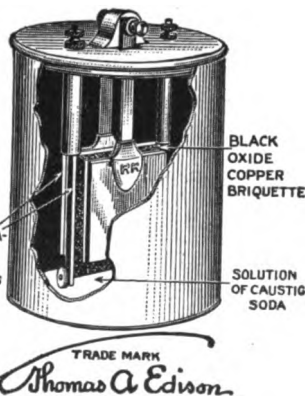
The Edison Cell differs from others in being absolutely non-polarizing. The voltage and current keep up until the end of its guaranteed life, whether consumption is slow or fast. There is no "fagging" and no "resting" is required.

Write for Battery Book No. 36 and also Battery Sparks. Dealers should ask for a supply.

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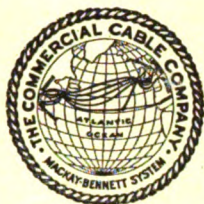
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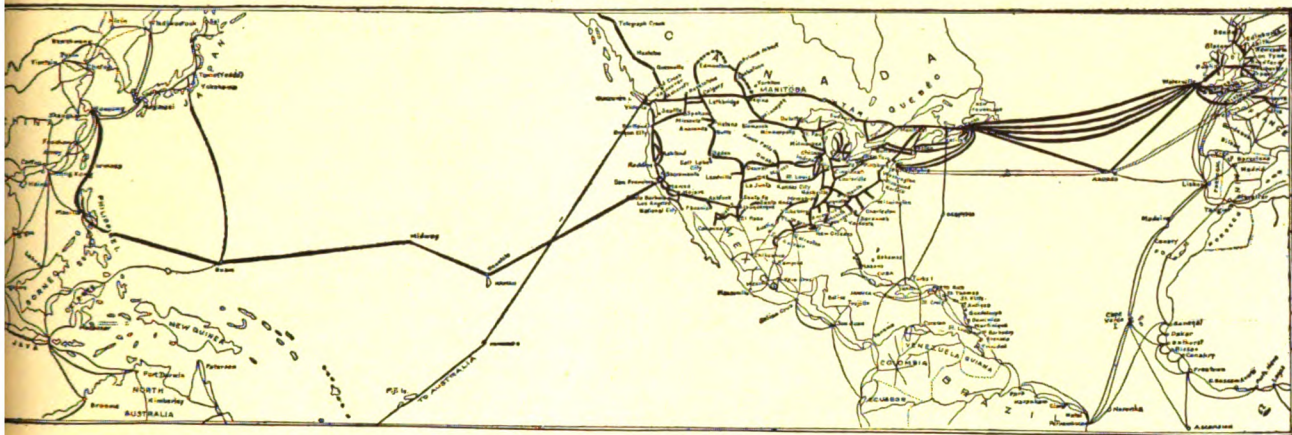
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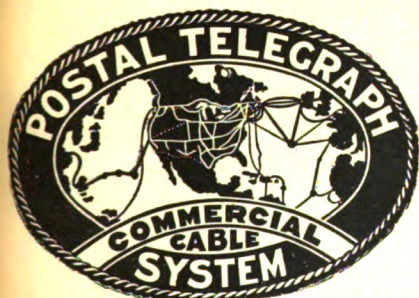
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Every man in the "Postal's" service is proud of the company's success.

These are the reasons why the "Postal" Company has been successful in the past and will be successful in the future.

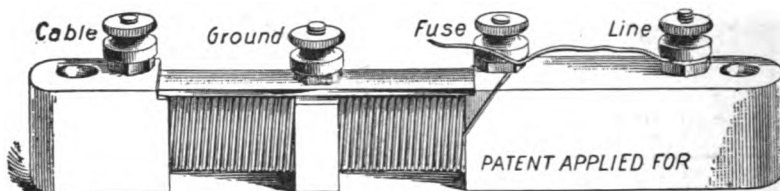
The progress of the Postal Telegraph System is evidenced by the continued extension of land lines, the numerous and important railroad connections recently made, the valuable connections with the German cables, the Pacific cable, the Direct West Indies cable, the Bermuda cable, etc.

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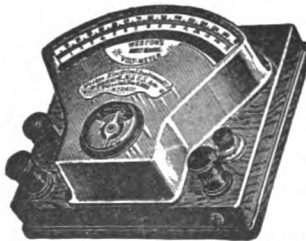
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A Semi-Monthly Journal Devoted to Land Line Telegraphs and Submarine Cable Interests

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1883

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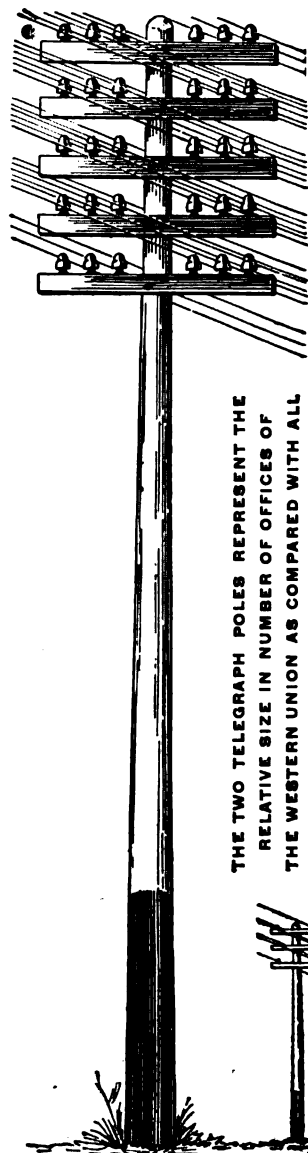
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No. 17.

NEW YORK, SEPTEMBER 1, 1906.

VOL. XXIV.

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SOME POINTS ON ELECTRICITY.

The Loopswitch and Loopswitch Testing.

In Four Parts—Part Four.

BY WILLIS H. JONES.

In discussing the subject under consideration, up to this point the description of the various methods of testing have been confined to branch office or external circuits only. In addition to this duty it also devolves upon the loop chief to test and locate from his central position defects in various apparatus located throughout the operating department.

Such apparatus are those of which the connections begin and terminate in the loopswitch board itself; such, for example, as office loops, repeaters, intermediate batteries, and certain local apparatus.

OFFICE LOOP.

An office loop or leg, as it is sometimes called, consists of two loops extended to some convenient desk containing a four-ohm sounder each at that point, the two cords and wedges of which loops are located in the loopswitch board in order to be available for connecting them with any desired multiplex set in the office. The accompanying diagram illustrates the connections. It will be seen that when the levers of the two three-point switches are turned to the left the circuit of each sounder is complete from the upper side of the wedge where it takes battery from the multiplex set back to the under lip of the same

wedge. Both conductors are thus used. When the levers are turned to the right, the return half of the loop is cut off and the current simply flows through a resistance lamp on the desk to a "ground," and the circuit ends at that point.

It is quite evident, therefore, that when an office loop is reported "open" the loop chief is in the best position to locate the fault quickly. For instance, if the circuit opens on the office loop while the latter is "grounded" on the desk, but closes with the levers turned to the left, after the loop chief has grounded the under side of the wedge at his board, he knows at once that the fault lies in a defective connection with the desk lamp or ground terminal at that point, because the two conductors show clear from start to finish while the lamp is cut out.

On the contrary, should the circuit close when the levers are turned to the lamp side only, the fact would indicate that the opening was on the return half of the loop, probably in a loose fuse plug behind the loopswitch, or at the cord binding posts at that point. Now and then an exceptional case arises that often perplexes one at first. An office loop will work all right "intermediate," but will not close to the "ground," although that connection shows no evidence of a defect. It will eventually be learned that a new cord has either been reversed when put in, or the lineman when repairing an old one has reversed the conductors in connecting them with the lips of the wedge. The result is that when the lever is turned to the "ground" the battery and conductor containing the sounder is left open. The loop chief only can detect this defect from his board. This he does by applying a battery to the return or "wrong" side of the office loop wedge, when he immediately discovers that the sounder on the desk responds. In repairing defective cords, therefore, it is evident that great care should be exercised to prevent reversing the two conductors.

DOUBLE-LOOP REPEATERS.

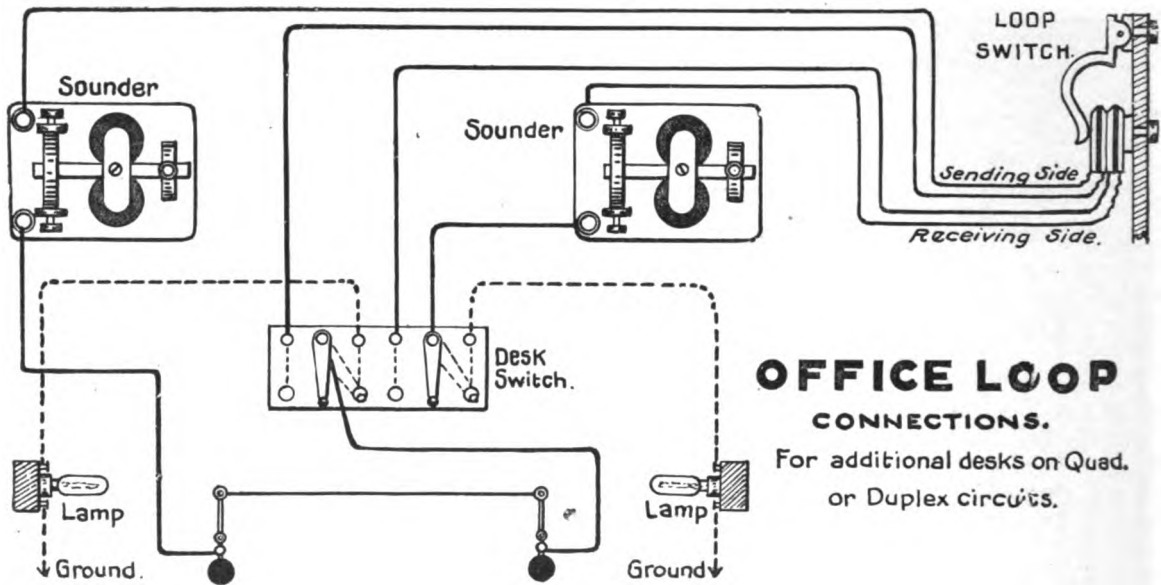
While the double-loop repeater is a very valuable apparatus and requires but little or no readjustment as a rule, when irregular loops are substituted it has one unfortunate defect which is very annoying, because the fault is not at first suspected and cannot be determined except by the loop chief at his board. We refer to an accidental opening on the receiving side of the loop that is inserted in the springjack which furnishes a separate current for such loop, other than that of the multiplex battery which feeds the companion loop. This loop is run through the con-

tact points of a repeating sounder, which latter is controlled by battery from the multiplex set. Should this loop open in the conductor, or in an improper adjustment of the contact points of the repeating sounder there will be no evidence of it at the multiplex set or interference that will prevent all offices on the companion from operating their loop as usual, but those on the defective side, of course, do not hear a tick.

This fault is easily detected at the loopswitch by inserting an instrument in each springjack. If both test sounders do not work in unison, the loop is first tested, and if found to be closed the repeater attendant is notified that the repeating sounder contact points require readjustment.

In like manner the repeater chief attending a single line set cannot readily determine from that point whether a near-by "ground" is on the wire or in his apparatus, but the loop chief by removing the repeater wedge from the circuit

which a charge of twenty-five cents apiece will be made: A Useful and simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, inc.; June 1 to July 16, inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, inc.; Switchboard Notice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power From the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16; The Dynamo—Series, Shunt and Compound Wound, Feb. 1-16, March 1; The Storage Battery, March 16-April 1-16-May 1-16; A New Double Loop Repeater—Comparative Efficiencies of a Polar and a Neutral Relay, June 1; Influence of Weather on Static—An Electrical Phenomenon, June 16; Induction, Leakage, Crossfire, July 1; The Loopswitch and Loopswitch Testing, July 16-Aug. 1.]



and tapping the same with his battery test wedge can immediately ascertain that fact. A "ground" of this kind often appears in the repeating apparatus, due to defective insulation of the fine wire attached to the transmitter bar, resulting in contact therewith.

The number of tangles the loop chief alone can straighten out is too great to attempt a description of each, hence his line of testing is distinctively different from the general rule and tends to give one a pretty thorough knowledge of the operation and connections of every piece of apparatus in the office.

(Concluded.)

[Important articles by Mr. Jones, appearing in back numbers are as follows, and may be had at the regular price of ten cents a copy, except those appearing prior to a year from the current date, for

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of TELEGRAPH AGE, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

Mr. E. Chambers, superintendent of the Western Union Telegraph company, Penzance, England, in writing ordering a renewal of his paper, says: "I am very much pleased with Telegraph Age and you can reckon me as a permanent subscriber."

Mr. J. B. Bertholf, manager of the Western Union office, Jersey City, N. J., in remitting to cover a renewal of his subscription, writes: "My subscription to TELEGRAPH AGE goes back to the first issue, and I should feel lost, indeed, if I were to be deprived of the paper now."

Personal Mention.

Mr. William Marconi, it is announced, has joined the experimental staff of the Columbia Phonograph Company. His inventions in the talking machine art will be the property of the company.

Mr. Wm. H. Young, president of the Old Time Telegraphers' and Historical Association, and Mr. W. H. McKelden, chairman of the finance committee of the same association, were visitors in New York on August 27.

Mr. George W. Madeley, an old timer, well known on the Pacific Coast, has resigned his position with the Western Union Telegraph Company at Sacramento, to accept the agency of the Northern Electric Company at Oroville, Cal.

Mr. Ralph W. Pope, secretary of the American Institute of Electrical Engineers, has returned to his home in New York, coming by the way of Montreal, which port he reached on August 11. He has resumed his duties at 95 Liberty street, New York, after an absence of two months in England and Scotland.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Mr. William J. Lloyd, assistant superintendent of the company at Chicago, who has been in Europe with his family for two months, passed through New York on August 20, en route to his home in the windy city.

Mr. Leonard Cox, traveling auditor of the company, sailed for Naples, Italy, on August 25, whither he has gone on a combined business and pleasure trip. Before returning Mr. Cox will visit the principal countries of Europe.

Mr. A. G. Saylor, chief clerk in the office of General Superintendent Belvidere Brooks, accompanied by his wife, is spending his vacation visiting various Canadian points along Lake Ontario and the St. Lawrence River, between Toronto and Quebec.

Mr. P. G. Kern, superintendent of the American District Telegraph Company, at Louisville, Ky., was a recent visitor at these offices, as was also F. A. Gentry, inspector, of Chattanooga, Tenn.

Mr. Ralph E. Bristol, of the general superintendent's office, accompanied by his wife, is in Michigan, where he is experiencing a very pleasant vacation.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

Mr. Jesse Hargrave, assistant electrical engineer, who was recently transferred to New York from Atlanta, Ga., is located in the office of the electrical engineer on the seventh floor.

Mr. C. E. Diehl, manager at Harrisburg, Pa., was a recent visitor at these offices.

This company will soon install a motor generator plant at the Bangor, Me., office, where it will replace eight hundred jars of battery.

Mr. W. H. McCollum, superintendent of construction of the Eastern division, has resigned, and he has been succeeded by Mr. T. W. Lane, now assistant superintendent of construction. Mr. McCollum's resignation takes effect on September 1.

This company has remodeled its St. Louis, Mo., office, so that it is now one of the best equipped offices in the service.

Superintendent Charles Shirley is again at his desk, after an absence on vacation.

Recent Telegraph Patents.

A patent, No. 827,914, for an electric battery, has been secured by Isidor Kitsee, of Philadelphia, Pa.

A patent, No. 827,918, for an electric circuit, has been obtained by Isidor Kitsee, of Philadelphia, Pa.

A patent, No. 827,916, for submarine telegraphy, has been secured by Isidor Kitsee, of Philadelphia, Pa. The submarine cable is supplied with a device with the aid of which sounders or other electromagnetic devices may be actuated to increase the receiving capacity of the cable.

A patent, No. 827,573, for a clamp and support for telegraph and telephone cables, has been awarded to Howard E. Sheeley, of Michigan City, Ind. At the center of sections having semicircular grooves are means for securing the sections to a pole or other support, the upper surface of the sections being beveled downwardly from the pole.

A patent, No. 827,919, for telegraphy, has been awarded to Isidor Kitsee, of Philadelphia, Pa. The invention consists of means for simultaneously transmitting two messages over a line comprising two transmitters, a key adapted to be manually operated, a source of current for one transmitter, a variable resistance, means for automatically varying the resistance, a manually operated key and source of current for the second transmitter, both transmitters being in operative relation to the line of transmission.

Patents expired:

Patent No. 408,214, for mechanical telegraphic apparatus, held by A. Cazana, Madrid, Spain.

Patent No. 409,157, for harmonic telegraphy, held by F. Van Rysselberghe, Brussels, Belgium.

Municipal Electricians.

The wire department of the city of Boston is sending out its annual report for the year 1905, a pamphlet of forty pages, with the compliments of the wire commissioner, Mr. Patrick J. Kennedy, under whose direction it has been compiled. As it gives a comprehensive summary of the work performed by the department for the year named, it affords a handy reference volume of the progress the New England municipality is making in the particular field alluded to.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. James L. Harbuck has been appointed manager at Andalusia, Ala., vice Mrs. E. T. Gaillard.

Mr. Edmond J. Burke, of Springfield, has been appointed manager of the Holyoke, Mass., office.

Mr. E. T. Moore, manager at Vicksburg, Miss., has been promoted to be manager at Lexington, Ky., vice W. T. Batterson, resigned.

Mr. C. J. Heath, manager at Monroe, La., has been appointed manager at Texarkana, Tex., vice Mr. Frank Meisch, acting manager.

Mr. H. Van Devender, manager at Mobile, Ala., has been appointed manager at Atlanta, Ga., vice S. L. Burts, promoted to be inspector of the Southern division.

Mr. E. E. Cord, chief operator, New Orleans, for the past three years, has resigned to accept a more lucrative position with the American Telephone and Telegraph Company at that place.

Mr. J. M. Martin, manager at Anniston, Ala., has been appointed manager at Pensacola, Fla., vice D. F. Cason, made manager at Greenville, S. C., to take the place of James E. Stevens, resigned, the vacancy at Anniston being filled by the appointment of Mr. J. J. Barnett.

Mr. C. R. Hughes, manager at Hattiesburg, Miss., has been promoted to the managership of the Mobile, Ala., office, Mr. Thos. J. Ferrell, manager at Ellisville, Miss., being appointed manager at Hattiesburg, the vacancy at Ellisville being filled by the appointment of Mr. Lee S. Brown.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. A. D. Holcomb, night chief of the Atlanta, Ga., office, has been appointed chief operator, vice J. H. Twyford, transferred to New York.

Mr. Clarence A. Stimpson, chief operator of this company at Philadelphia for the past twenty years, has resigned his position to engage in other business.

Mr. Arthur Hawker, for five years manager of the Bridgeport, Conn., office, has been appointed manager at New Haven, Conn., vice J. D. McDonald, who will continue in the employ of the company in Boston.

Mr. W. C. Lloyd, chief operator at Memphis, Tenn., has been appointed manager at that place, vice E. R. Bryan, resigned to engage in the real estate business. Mr. Lloyd is thirty-four years of age and is a native of Bladen Springs, Ala. He has had a valuable experience as a railroad and Associated Press operator. He has been identified with the commercial companies for the past ten years, filling important positions at various points.

The Railroad.

It is announced that the Atchison, Topeka and Santa Fe Railway Company has given its one thousand telegraph operators, from Chicago to El Paso, an increase of wages, averaging about \$4 a man, effective at once.

A newspaper paragraph is going the rounds that the Delaware, Lackawanna and Western Railroad Company will dispense with its operators on account of the introduction of the telephone extensively along that system. This is not the case. In addition to its telegraph plant, the company has installed 1,200 telephones along its nine hundred miles of track. The telephones are to be used as an auxiliary system to the telegraph and not to supplant it.

The next meeting of the Railway Signal Association will be held at the Great Northern Hotel, Chicago, Tuesday, September 11. "Standard Specifications for Mechanical Interlocking" will be discussed, and certain revisions recommended for consideration and action at the annual meeting. Identification marks for wires and cables from a maintenance point will also be considered.

The secretary, H. S. Balliet, announces that on account of the presence in Washington, D. C., of two other large conventions on October 9, 10 and 11 (dates noted for holding the annual meeting), and a scarcity of room to hold sessions and facilities to display apparatus and materials, the executive committee left it to a vote of the active members to select a new date, which is now fixed by this vote as October 16, 17 and 18. The New Willard will be association headquarters.

Col. G. L. Lang, superintendent of telegraph of the Queen and Crescent system, has resigned his position, severing a term of forty years in railway telegraph service. As he has passed the age of sixty and has acquired a moderate competence he thinks very wisely that if he ever expects any enjoyment out of life he must take it pretty soon. Col. Lang began the business in 1866 with the Pittsburg, Fort Wayne and Chicago railway in Pennsylvania. From there he went to the Pittsburg, Cincinnati and St. Louis railway in Ohio; later, becoming superintendent of telegraph of the New York and New England railway at Boston. He entered the service of the Cincinnati, New Orleans and Texas Pacific railway in 1897 as superintendent of telegraph and signals, with headquarters at Lexington, Ky. Owing to the rapid extension of the automatic block signal system of the road it was thought best, between four and five years ago, to establish a signal department separate from the telegraph, which was done, Col. Lang retaining supervision of the telegraph lines, to which were added those of the Alabama Great Southern railway with headquarters at Chattanooga. During his five years' residence in Chattanooga he has made a host of friends. He is a member of the Mountain City club, making the club his home.

The Cable.

Cables interrupted August 28:

Venezuela Jan. 12, 1906

Messages may be mailed from
Curacao or Trinidad.

Pinheiro "via Cayenne" Aug. 13, 1902

Santa Cruz de la Palma (Canaries) July 12, 1906

The Great Northern Telegraph Company has completed the last section of its cable between the Faroe Islands and Iceland, thus establishing communication between England and Iceland. The land lines on the Arctic island connecting the point of cable landing with the capital are now in process of construction.

In the *Journal Telegraphique* of July 25, published at Berne, Switzerland, there appears an illustrated article, one of a series, descriptive of the cable station of the Eastern Telegraph Company, at Alexandria, Egypt, which is an important center of submarine cables. This station is especially interesting since it is provided with the most modern apparatus of submarine telegraphy. In the present installment the testing room is described.

The Emperor of Japan has appointed Mr. George Gray Ward, vice-president and general manager of the Commercial Pacific Cable Company, New York, a Commander of the Order of the Rising Sun. Mr. Frederick Ward, manager in England of the same company, has been appointed Commander of the Sacred Treasure, and Mr. Albert Beck, secretary of the company, Officer of the Rising Sun. These appointments have been made in connection with the extension of the Commercial Pacific Company's cable system to Japan.

On the opening of the section of the Commercial Pacific cable, connecting Japan with America, an attractive postcard in colors was issued in the Island Kingdom commemorative of the event. In the center, within a circle, the route of the entire Pacific cable is shown, including both the lately effected connections with Japan and China. Flags of America and Japan are draped on either side, while at the outer edges of the card the national flower of each land is shown. Above the circle a recording slip appears, while still above that there is a coiled tape. We were indebted to K. Kawasumi, an electrical and telegraph engineer of the Japanese telegraph service at Tokio, for the card.

Commercial receipts from the Alaskan cable and telegraph lines amounted to \$24,000 in July, or \$2,000 in excess of the amount in any previous month. The official despatches sent would have cost \$12,000 had they been paid for at commercial rates. This rapid increase in the demands upon the Alaskan cable and telegraph system will be met by the government by the duplexing of the cable. This duplexing apparatus is the first ever manufactured in Washington, and was made by

the Army Signal Corps in that city at a cost that is said to be \$22,000 less than manufacturers offered to make it. The cable ship Burnside, which is to install the duplexing apparatus at the Alaskan end of the cable, will probably leave Seattle about September 15. It will carry 200 miles of new cable for the extension of the cable service south of Ketchikan. This extension will be effected by tapping the line from Sitka to Juneau at Cape Fanshaw. From that point a branch line will be extended down to Wrangell, thence to Hadley on Prince of Wales Island, and thence to Ketchikan, sixty miles from Port Simpson, the British town which is to be the terminus of the Grand Trunk Pacific Railway.

The report of the Pacific Cable board for the year ended March 31, has just been issued, remarks the *Electrical Review* of London, and although it is pleasing to note that the receipts have increased, they have not done so in a manner which could be called satisfactory. The revenue figures are £91,952 (thirteen months' Australian receipts), against £87,446 in the preceding year. The number of words increased by 45,568, and it is to be hoped that the opening of new offices in Australia to compete with the Eastern Extension Telegraph Company will greatly increase the revenue of the cable board. Owing to the refusal of the Eastern Extension Company to accept the Commonwealth agreement as defined by the conference, the Commonwealth Government at once withdrew the privileges provisionally extended to the company at Melbourne, and accorded to the board facilities in Sydney similar to those enjoyed by the company under the New South Wales agreement. The board paid to the Canadian Pacific Railway and the Atlantic companies for the insertion of date and time and duplicate copies, the sum of £2,642 os. 7d. The deficiency on the year's working of £72,556 1s. 9d. is shared in the following proportions, viz.: England and Canada £20,154 9s. 4d. each, Australia £24,185 7s. 3d., and New Zealand £8,061 15s. 9d. There will be a deficit for 1906-7, the board calculates, of £87,006, after allowing for a revenue of £88,600 and a special expenditure of £8,000 in connection with the opening of offices and competitive tactics in Australia. It does not appear to us, however, that the opening of new offices is warranted at this expenditure if the traffic is to be less in consequence. An increased income must surely be secured when new offices are opened. The estimated traffic appears to us to be too slow, unless, of course, the board has been influenced by circumstances not mentioned in the report.

Orders, if sent to Telegraph Age, Book Department for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

Take TELEGRAPH AGE and keep posted.

Wireless Telegraphy.

A De Forest wireless telegraph station is being constructed at Sault Ste. Marie, Canada. It will have a capacity of sending and receiving 600 miles over land and 2,000 miles over water in daytime. This system is being extended all through Canada and to the Pacific.

A patent, No. 827,524, for a wireless telegraph system, has been obtained by Lee De Forest, of New York. One claim covers a transmitting system, a key for energizing the same, a receiving system, a responder associated therewith, and magnetic means, energized by the key, for moving one element of the responder away from the other element thereof.

A patent, No. 827,523, for a wireless telegraph system, has been issued to Lee De Forest, of New York. Separate multiple antenna are provided for the transmitting and receiving systems, the transmitting multiple antenna comprising a larger number of conductors than the receiving multiple antenna and having its conductors more closely spaced than those of the receiving antenna. Means are provided for attuning the transmitting and receiving antennae to different frequencies.

The United States leads the world in the number of wireless stations now in operation, according to a list compiled by the Bureau of Equipment of the Navy Department. There are in the United States and its possessions, 88 stations, of which 32 are directly under the control of the Navy Department. Great Britain (and Ireland) comes second, with 43. Other countries follow: Belgium 1, Denmark 4, Germany 13, France 6, Holland 8, Spain 4, Portugal 1, Gibraltar 2, Italy 18, Malta 1, Montenegro 1, Norway 1, Austria-Hungary 2, Roumania 2, Russia in Europe 3, Sweden 3, Turkey 6, Argentina 5, Brazil 5, Canada 5, Chile 1, Costa Rica 1, Mexico 2, Panama 2, Uruguay 1, Trinidad 1, Tobago 1, Andaman Islands 2, Burmah 1, Hong Kong 1, China 5, Japan 2, Dutch East Indies 5, Russia in Asia 1, Egypt 2, Morocco 2, Mozambique 2 and Tripoli 1.

A curious story of an effort to put the wireless telegraph out of business by means of fog-horns is told in the following despatch from Chicago: "Someone with great ingenuity furnished a wonderful scheme to put the wireless telegraph gambling boat, the City of Traverse, out of commission. The idea was to eliminate the wireless communication with the craft, depriving it of race results by sounding a huge fog horn, of which the vibrations would 'blur' the wireless message. The results were grotesquely disastrous. The gamblers laughed at the police in the tug Andy. The life-saving crews from Jackson Park and South Chicago, believing the sounds to be distress signals, hurried to the Hyde Park crib: sailboats, launches, motorboats, and an armada of small craft rushed to the rescue, while

the shore from Kenwood to South Chicago were lined with persons fearing an excursion boat disaster. No difficulty with the wireless apparatus was found on board the Traverse, according to employees of the boat and patrons on board. The messages of the race results came without mishap and with regularity, they said. The chief inconvenience suffered was the blatant noise sounded from the foghorn of the Andy, which hovered close to the side of the larger boat all afternoon, and made the deck of the ship a bedlam."

The Death of Cornelius Dwyer.

The death of Cornelius Dwyer, on August 8, removes another old time and United States Military Telegrapher, a man well known in the profession throughout the country. He was born in Ireland, December 18, 1838, but came to this country in 1851. His early experience in the telegraph service began in 1854, when he acquired the art under Capt. Randall P. Wade, son of Jeptha H. Wade. The consolidation at this time of telegraphic interests under the name of the Western Union Telegraph Company, brought young Dwyer into the employ of the new organization. He saw service in the West under Gen. Thomas T. Eckert. During the last half of the Civil War he served as a telegrapher in the army, subsequently filling many positions of responsibility in telegraphic employ in various parts of the country. His spine suffered injury in Nashville because of being thrown from a horse. From this he never recovered.

C. R. Tracy, aged fifty-five years, for twenty-two years, and until within three years ago, manager of the Western Union Telegraph Company at Wheeling, West Va., died August 27. He was a native of Maryland. He took an active part in municipal affairs at Wheeling for many years.

Howard S. Larcombe, who died August 22, at Beltsville, Md., will be remembered by some of the old New Yorkers, as he worked in "195" many years ago. Of late years he was employed at the Washington, D. C., office of the Western Union Telegraph Company. If he had lived he would have been fifty-eight years old on September 4. He was a native of Pittsburg, and his entry into the telegraph dates back to 1860, beginning as a messenger in the service of the old South Western Telegraph Company at Huntsville, Ala. Both Mr. Larcombe's father and mother were telegraphers, the former being superintendent of that section of the company named, covering the north portion of Alabama. When the federal troops occupied Huntsville, April 11, 1862, and took possession of the telegraph lines, young Larcombe's services with the company terminated forthwith. In November, 1869, he commenced to work for the Western Union, in whose employ he subsequently remained with the exception of about a year and a half in 1884-85.

Underground and Overhead Construction.

Mr. W. H. Thompson, superintendent of fire alarm telegraph at Richmond, Va., read an interesting paper at the convention of the International Association of Municipal Electricians, held at New Haven, Conn., August 15, 16 and 17, entitled "Comparison of Underground and Overhead Wiring and the Relative Values of Single Rubber-Covered Wire and Lead Incased Cable," from which we print the following extracts:

"It is clearly understood and can hardly be denied that the best, safest and most economical system, in the long run, for the transmission of electrical energy, is the underground system, if we except possibly the long-distance telephone. As yet we have been unable to overcome the induction and retardation on these lines where any considerable portion is underground. Electric lighting and power circuits in which a difference of potential of from one to ten thousand volts is maintained, can be operated much better in underground ducts than when suspended in the air. The insulation resistance of underground wires and cables can be maintained at from one to six megohms per mile, something that cannot be approached by any overhead line except where they are made up in the form of cables equally well insulated and protected by an outer covering of lead or other equally durable material.

"In the congested districts of all cities, all electric wires should be placed underground, as there is now no excuse for maintaining them on the overhead pole lines, an obstruction to travel and a hindrance to the fire departments in the performance of their duties. All services from underground systems should be continued underground until the interior of the building is reached. The greatest of care should be exercised in the construction of lines for the transmission of electrical energy for the production of light, heat and power and for the fire alarm and police telegraph, from which so much is expected.

"There are two systems of underground electrical services in my city of Richmond, Va., the drawing-in and the solid system. In the former, the conduits are laid in concrete and terminate in manholes, which are necessary owing to the fact that there is a limit to the amount of wire or cable that can be drawn through a duct. The ducts are made of terra cotta, and when properly laid in concrete they require little or no attention for years. The manholes are of brick, laid in cement, and they are provided with iron covers.

"Unfortunately, the use of underground systems as yet is the exception rather than the rule, and most electricians for some time to come will have to deal with the question of overhead lines. In the majority of towns and cities, these lines are constructed without any system or well-defined plan, the aim seeming to be to reach the desired point in the shortest, easiest, cheapest and, oftentimes, in the most flimsy manner pos-

sible. High and low potential wires are strung on the same poles, often on the same cross-arms and fixtures.

"The owners of electric light and power lines too frequently make a pretense of using insulated wire. The insulation resistance of a high potential overhead circuit should be not less than from fifteen to twenty megohms per mile, yet I have known them to drop to less than one-half megohm per mile after a soaking rain, and it is rarely that they reach from two to five megohms under the most favorable conditions. Yet the great public is lulled into the belief that these lines when covered with this useless substance are perfectly harmless, incapable of doing them bodily injury, and wrecking telegraph and signal systems. Almost perfect insulation of overhead and underground lines is possible and the only thing that stands in the way of this attainment is the added expense and the apathy of the municipal authorities and the public, who good-naturedly suffer great abuse without a murmur."

"While the fire alarm and police telegraph apparatus has been brought to its present high state of efficiency, the line construction is practically the same as it was in the earliest days of the fire alarm signal service. It is, of course, a fact we all recognize, that although we may have the best apparatus and the most costly, and although everything about the central office be kept in the most perfect condition, all of our efforts may be set at naught at a critical moment by the breaking down of some poorly constructed outside circuit.

"It is an almost universal practice to claim the top gain on all poles that have been erected for the use of the city wires. This practice of placing city wires above all others was a very good one at one time. But since the introduction of high potential wires it is a practice which, to say the least, should be discontinued. Many deaths and injuries have resulted from this cause, and many more will no doubt occur unless the practice is abolished.

"Roof construction is one of the things that should be avoided in a fire or police telegraph system, because it is not easily controlled; it cannot be readily inspected and can easily be tampered with through ignorance or design. Above all things, bare, uninsulated loops should be avoided. An instrument cut in on such a loop can never be depended upon to do its work, being liable at all times to be cut out of service by the slightest accident. Copper wire covered with the best grade of insulation, and this insulation in turn, covered with a lead sheathing, is the only proper thing to use in roof construction, and is the cheapest in the long run."

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"Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students" is acknowledged on all sides to be the standard work of the telegraph. Speaking strictly within bounds, it is not too much to say that this volume presents the finest study of the complex subject of the telegraph ever attempted. There is no other book like it or even approaching it, in thoroughness, comprehensiveness, or in original detail of statement. The author, Willis H. Jones, is a practical telegrapher himself—an engineer in his profession of recognized ability, who knows exactly what other telegraphers want to know, and has the faculty of imparting that knowledge in a manner at once so clear, so simple, so bright, so entertaining, so free from needless technicalities, that his readers, even the least informed among them, readily understand his meaning. The helpful qualities of the work will be clearly manifest alike to the beginner, to the student, to the operator and to all telegraphers whether in the commercial or in the railroad service.

"Pocket Diagrams" does not deal in theory; it is packed full from cover to cover of the common sense of telegraphy, the side against which the ordinary every day operator runs up against, and respecting which he desires information of the kind that will aid, not mystify, him. The book contains 334 pages, and has 160 splendid diagrams. It has the unqualified endorsement of telegraphers everywhere.

The price of Pocket Edition of Diagrams, etc., is \$1.50.

PHILLIPS CODE.

The popularity of the Phillips Code, by Walter P. Phillips, was never more apparent than at the present time. Its acceptance by the telegraphic fraternity, as a standard work of the kind, dates from its first publication, and the constantly increasing demand for this unique and thoroughly tested method of shorthand arranged for telegraphic purposes, has necessitated from time to time the issuance of several editions. The present edition was carefully gone over under the supervision of Mr. A. P. Velie, an expert press and code operator, for many years identified with The Associated Press, New York, a few revisions made and a number of contractions added, until now this "staunch friend of the telegrapher" is strictly up-to-date in every particular. It has been declared that an essential qualification of a "first-class operator" was a thorough understanding of Phillips Code.

Many expert code operators have examined the revised edition of this code, and all unite in pronouncing it perfect. Mr. George W. Conkling, who has won the championship for sending code in many tournaments, says:

"I have examined thoroughly the additions contained in the latest edition of the Phillips Code and most heartily approve of them. Every operator who is familiar with the code should find no difficulty in mastering the new contractions, as they 'fit in' smoothly and I think the ground has been entirely covered."

The price of the book is \$1 per copy.

"Telegraphers of To-day," illustrating the personnel of the telegraphic profession with more than 900 biographical and historical sketches of leading members of the craft, is a unique and valuable work; it has become standard, being the only work of the kind extant. It contains 354 double column pages, 7 by 11 inches in size, has gilt edges and is bound in imitation Morocco—altogether a handsome volume.

Of this fine publication, becoming more and more valuable as time passes, we have but a few copies left. The original price was \$5. In order to readily dispose of these remaining volumes, and place them where they rightfully belong, in the hands of every telegrapher who failed to secure a copy at the higher original price, we have cut the

figure to \$1 a volume. On receipt of this amount the book will be sent to any address, express charges to be paid by the purchaser. At this low rate, a sum below the cost of binding the book, no telegrapher who desires to own a copy should fail to obtain one at this time, for this "bargain" price will probably never be repeated.

"The Quadruplex," by William Maver, Jr., and M. M. Davis, still holds its own as a work of authority in its treatment of its subject. A clear analysis of that system of telegraphy is afforded and telegraphers have constant need of the book. There are 128 pages in the volume and 63 illustrations; price, \$1.50.

The life of Prof. S. F. B. Morse, the standard work, authorized by the Morse family, and compiled from original papers and other authentic data in their sole possession. It is a clearly written biography, charmingly told by a trained newspaper man, a close personal friend, and presents the life of this great inventor of the telegraph in a broader, more intense, human and truthful attitude than ever before attempted or even possible; 775 pages, illustrated; sheepskin binding. The original price was \$6, which we have reduced to \$3, on receipt of which the book will be sent, express charges prepaid.

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Old Timers' Souvenir—Miniature Legless Key. This is a beautiful emblem for operators; an attractive charm for the watch chain; a perfect duplicate in every detail of the celebrated miniature steel lever telegraph key that attracted so much attention and which was distributed as a souvenir at the banquet of the Old Time Telegraphers' and Historical Association at the Waldorf-Astoria, New York, August 31, 1905. It has a French lacquered body and nickel-plated lever. Price, by registered mail, prepaid, \$1.50.

"The Practical Management of Dynamos and Motors," by F. B. Crocker and S. S. Wheeler, as indicated by its title, affords a clear understanding of the use, care and operation of these important adjuncts of the well equipped modern telegraph office. There is a constant demand for this book, for telegraphers find it an invaluable addition to their working library. There are 206 pages, and 99 illustrations; price, \$1.

"Electrical Instruments and Testing" is the title of a new volume by that industrious and excellent writer on such subjects, Norman H. Schneider. This book treats of the use of the voltmeter, ammeter, galvanometer, potentiometer, ohmmeter and the Wheatstone bridge. The explanations are practical, given with numerous worked out examples, fully illustrated with diagrams and drawings. The book is intended for practical, everyday use, and also as an introduction to the larger works on electrical testing. The apparatus described is modern and such as is generally employed. The volume is well printed on plate paper, contains 199 pages, including a fine index, and there are eleven chapters and 105 illustrations. The price is \$1; bound in cloth.

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NEW YORK, SEPTEMBER 1, 1906.

The Book Department of Telegraph Age, always a prominent and carefully conducted feature of this journal, has in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientele. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

Governing Preferment.

The editorial entitled "Governing Preferment," republished in the August 1 issue from an earlier number of TELEGRAPH AGE of several years ago, in which we took occasion to enlarge upon the general proposition that proficiency and willingness are the elements in individual character that count, and that telegraph operators showing a disposition to acquire a mastery of their business are the ones who are going to get ahead, etc., has elicited the following letter from Mr. Guy E. Paine, general superintendent of the Southern division of the Postal Telegraph-Cable Company, at Atlanta, Ga., which speaks for itself:

Personally, I appreciate very much your republishing the editorial in your issue of August 1 on the subject of men in the telegraph business endeavoring to fit themselves for promotion. When the article first appeared I made good use of it and hope to do so again.

This expression of acknowledgment comes from a high official in the telegraph service, and as such is not without significance, and is regarded at its full value. Evidently Mr. Paine, from long experience, gained in the upward climb to preferment, and as an executive, recognizes the true meaning of the admonition to telegraphers expressed in the article in question, and hail's its republication because of the influence for good he perceives may result therefrom.

And yet, if a brave and struggling operator, fired with a determination to get ahead, had been moved to write as Mr. Paine has done, and as did our former correspondent, because of whose letter we reprinted the editorial, we should have welcomed the communication, even more than that received from Mr. Paine, as in that case it would have been indicative that the lesson we aimed to teach was, indeed, taking root in the minds of those who must heed the warning given if they are to attain success in their chosen calling. For it was more to the man at the key, whose future lay before him, that our remarks, as referred to, were directed.

As a telegraphic newspaper, supported by telegraphic interests, we would do all in our power to promote individual excellence within the ranks, for the telegraph has urgent need of the services of its intelligent followers. We would speak words of truth and of cheer; would seek to shape and guide manly initiatives, and stimulate worthy ambition, for it must be admitted that the telegraph itself must be the logical source of supply from whence to draw material for filling the higher positions it has continually at its disposal. We wish that the telegraph operating force everywhere might be actuated by a larger intelligence and stimulated by a deeper enthusiasm. We are satisfied that a better outcome would await such conditions. The service has urgent need of efficient men. Hundreds of good positions are open and waiting to-day for the right persons. The money value of those variously skilled above the level of the operating desk, is as relative in the telegraph as in other fields of endeavor. Ten to one it remains with the individual whether the prize, awaiting in one form or another, shall be his or not. Careful fundamental preparation, if of the right kind, will just as surely meet with recognition and reward by promotion, even if the latter lands one outside of the telegraph, as the sun will rise after its setting. Hence we would like to say to the operator, especially to the young men, to take life seriously. It is individual will and push, governed by integrity, sobriety of conduct and strict loyalty to employing interests, that tells; knowledge is the key that unlocks the door to the steps leading upwards. Let the brain be active, the mind pure, the body healthy, and one may defy the adverse influences of the world, and safely count on success.

TELEGRAPH AGE possesses hundreds of letters from persons now in other walks of life who have been stimulated to greater exertion in life's work by the advice so frequently expressed by this paper, and have found success as a reward for their earnest endeavors. Many of those to whom we refer, believing that promotion was too slow in the telegraph service, yet recognizing the excellence of training gathered in its employ, made use of their former profession as a stepping stone to other avocations where, with hardly an exception, they have attained success and wealth. There is need of further like results and in larger measure.

Postal Telegraphy in Australia.

Apropos of our article on postal telegraphy which appeared in the August 16 number of TELEGRAPH AGE in answer to the speech delivered in the House of Representatives by Congressman Smith, of Michigan, the following, taken from the July 18 issue of *The Transmitter*, printed at Sydney, New South Wales, a paper published in the interest of the telegraph in Australia, may be a comfort to the abounding egotism of the honorable gentleman who would introduce the Australian telegraph system into this country, as an improvement over that we now possess:

"Under the heading 'Postal Departmental Business,' a Brisbane daily said recently: 'One of the most satisfactory proofs of returning prosperity in Queensland is to be found in connection with the post and telegraph business. It is understood that the amount of business and the returns have been increasing steadily for some time back, and, though official figures are not now available, they run into many thousands on the right side of the ledger. At the time of the classification of the Commonwealth service, the staff everywhere was cut down to the lowest point consistent with efficiency, and the recent improvement in business necessitates an increase in the number of officers at several centers.' Another paragraph in the same paper some time ago said: 'There have been absolutely no appointments made to the service in this state since the beginning of 1901, except telegraph messengers at £26 per annum. This has been maintained despite numerous retirements, and the usual dismissals, resignations, etc., inseparable from a large service.' Undoubtedly, these are official statements, as the information could not be obtained except from an official source. The phrase which strikes our fancy is 'consistent with efficiency.' We have our own ideas as to what constitutes efficiency in a telegraph service, viz.: the quick despatch of business, while at the same time not curtailing the rights of the employees as set out in the public service act and the regulations. One could hardly talk of comparative efficiency in a business such as ours, as it must either be an efficient service or not. We incline to the latter view, and we have had some ex-

perience. We doubt whether an impartial board of inquiry into the working conditions, and the treatment of telegraph business generally, could have anything good to say of the Queensland service. We also doubt if it would be a pleasing experience for the telegram-sending public to learn that a cable can be sent to London and a reply received in a very much shorter time than it sometimes takes messages to reach Brisbane from offices situated in the state. The first mentioned paragraph contains two welcome admissions. We have never ceased from pointing out that business has increased largely, and that very many offices are undermanned. Taken in conjunction, the two statements point clearly to the conclusion that real telegraphic efficiency can not honestly be expected, nor can the men get the absolutely fair treatment to which they are justly entitled. Under the act we are entitled to certain rights which are not at present being granted; not perhaps that there is any objection to so doing, but because a sufficient staff is not available. Our complaint is that there appears to be no honest attempt to cope with an unsatisfactory state of affairs. Everything appears to be subordinated to a desire for economy. Boiled down, the facts are: No appointments have been made for five years, although numerous vacancies have occurred through deaths, retirements under the age limit clauses, dismissals, etc. Two years ago, the service was cut down to the lowest limit consistent with economy. Business has admittedly increased by many thousands. New offices are being continually opened and have to be filled from the present staff. The ranks of telegraphists are being reduced by each new appointment to a postmaster-ship, as none are being introduced to fill any such vacancy. If the present system is continued, the telegraphist in the course of years will become as extinct as the dodo. In the face of all this it cannot be wondered at that officers cannot get their recreation leave in a reasonable time, or that numerous irregularities are allowed to continue. Perhaps we are old fashioned in our ideas, but we have always been under the impression that the one object of a telegraph service was the quick despatch of business, and that each message was entitled to the same consideration. If a suggestion recently made were to be carried out, this could not possibly be the case, and an invidious distinction would be made between messages handed in by the public. We are afraid our predictions stand a fair chance of an early fulfillment."

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Orrin S. Wood and the Early Telegraph.

It has been remarked many times within the past two weeks, and with evident surprise, that it should have been possible for us to publish a communication over his own signature, from the first manager of the first telegraph office established in New York, such as appeared in our issue of August 16. While the writer of that note, Orrin S. Wood, may be known to some of the older members of the fraternity, it is quite possible that the vast majority of telegraphers of the present day, only know him, if at all, as an historic figure, one of the master minds identified with the early development of the telegraph on this continent.

In assigning the small group of the most distinguished members of the early telegraphers to the rightful positions relatively held by them, of course Prof. Morse stands number one. Next to him comes Alfred Vail, whose home was at Morristown, N. J., and who was a valuable assistant to Morse in the construction of telegraph instruments. Place number three should be accorded to Ezra Cornell, who superintended the construction of the first line of telegraph ever built, that between Washington and Baltimore, and who afterwards became the founder of the university bearing his name. Next to Mr. Cornell comes Orrin S. Wood, whose brother-in-law he was, a gentleman who became identified with the telegraph service in August, 1844. All of the quartette named have passed away except Mr. Wood, and at the age of eighty-nine he is the only remaining link of the remote past with the present in the history of the telegraph.

Early in August, 1844, Prof. Morse and Mr. Cornell prevailed upon Mr. Wood to go to Washington to join with them in demonstrating the practical value of the electric telegraph. For it must be remembered that its utility had yet to be proved by Prof. Morse, for it was a new device and of a nature so revolutionary in character that much skepticism as to its real worth still existed in the public mind. Mr. Wood proved to be an apt telegraph scholar, and he quickly became expert at the key. His ability as an operator won for him the confidence and esteem of Prof. Morse, ending in an attachment that lasted until the death of the great inventor.

The telegraph office at Washington was originally located in the Capitol, occupying three rooms in the basement, one room for the recording instrument, another for the Grove battery of one hundred cells, and the third room for the heavy relay which required two men to lift when it became necessary to remove it to the post-office.

During the session of Congress, 1844 and 1845. Mr. Wood sent the proceedings of the Senate and House of Representatives free of charge to the Baltimore American, and after sending the inaugural address of President Polk, on the 4th of March, 1845, left on the following day to meet Mr. Cornell in

New York, where they put up a wire on the roofs of the buildings from lower Broadway to Bleecker street. As a result of this exhibition a company was organized and a line was erected (using No. 16 copper wire) from Exchange place, by way of Broadway and Fourth avenue, to Fort Washington, and from Philadelphia through New Jersey to the Palisades above Fort Lee, where high masts were erected on each side of the river. But at this point an obstacle was encountered which led to the abandonment of this route, as no wire could be found to bear the strain of the long high stretch necessary to clear the masts of vessels passing up and down the river, at this point over a mile in width.

The line from Philadelphia was then diverted from Plainfield to Jersey City, from which point the messages were brought to New York by messenger, crossing the river by ferry. This method was continued for two years, until the practicability of the submarine cable for river crossings was demonstrated.

The first section of the New York, Albany and Buffalo line was finished and was put in operation by Mr. Wood between Albany and Utica in January, 1846. At Utica, during the winter of 1845-46, Mr. Wood taught a class in telegraphy to provide operators for the Syracuse, Auburn, Rochester and Buffalo offices, which were opened early in 1846, and with Albany and Utica constituted the first instance of more than two offices worked successfully in one circuit in the world's history. Leaving his brother, Otis E. Wood, who afterward became superintendent of the line, in charge of the office at Buffalo, Mr. Wood returned to New York in the autumn of 1846, and opened the first telegraph office for business in that city. It was located on the corner of Exchange place and Hanover street, in the Post building. The Boston line, in course of construction at this time, was also run into this office, but owing to the inexperience of operators at way stations interruptions for many hours at a time were very frequent during the winter of 1846-47 upon the New York and Boston line. Mr. Wood remained in charge of this office until March, 1847, when he accepted the position of superintendent of the Montreal Telegraph Company, which had just been organized.

For the past twenty-five years Mr. Wood has been living in retirement, spending his winters in New York City, and six or seven months in the country. A great lover of nature, he is the happiest when on his farm near Turner, Orange County, New York, where he is wont to dispense a most delightful hospitality.

The new classified catalogue of books on the telegraph, telephone, wireless telegraphy, electricity, etc., published in TELEGRAPH AGE, may be had for the asking.

Those who contemplate subscribing for TELEGRAPH AGE, and who would first like to inspect a sample copy, should not fail to write for the same.

The Convention of the International Association of Municipal Electricians.

The event of the eleventh annual convention of the International Association of Municipal Electricians, held at New Haven, Conn., on Wednesday, Thursday and Friday, August 15, 16 and 17, has taken its place in the history of the memorable meetings of this association. The "Elm City" gave the visiting electricians a cordial welcome, and much enthusiasm was manifest on all sides, both on the part of host and of guest. The weather was propitious, the programme of business and of a social nature was carried out in full, the attractions of the city and of its environments came in for their share of attention; the university was fully inspected, and the praises of old Eli were much in evidence.

The city officials, together with their wives, vied with each other in affording a reception to the visiting electricians, making the occasion one long to be remembered.

The place of assembly was in the aldermanic chamber in the City Hall, generously tendered by the board and who caused it to be handsomely decorated for the occasion with potted plants and palms and the walls draped with flags.

Amid such attractive surroundings the electricians met at ten o'clock on Wednesday morning, August 15, Louis M. Ullman, president of the board of police commissioners, presiding. The proceedings were opened with prayer by Rev. Franklin Knight, after which Mayor John P. Studley, of New Haven, welcomed the electricians in behalf of the municipality. He was followed by Governor Henry Roberts, who came down from Hartford for the purpose of tendering a welcome to the electricians broader than the city afforded, because co-extensive with the state itself.

Governor Roberts said that New Haven had been honored many times by national conventions, and that the state appreciated the honor. He said that Connecticut had been known under various names, among them being the land of steady habits, and also the Nutmeg State. He observed that the electricians took recognition of the latter appellation by the fact that they had nutmegs attached to their badges. The governor said that he believed that the proper name was the Constitution state. He said that the spirit of invention was widespread throughout Connecticut and that this had been the means of building up many thriving towns. He wished the electricians a successful convention and gave them a cordial welcome to the state.

After Governor Roberts had finished ex-Mayor Albert C. Hendrick presented the electricians with a handsome wooden gavel, made by members of the fire department of New Haven, to be used by the presiding officer at its conventions. The wood from which the gavel is made is red cedar and native elm. Mr. J. B. Yeakle, of Baltimore, and A. S. Hatch, of Detroit, responded to the addresses of welcome.

A short recess was then taken, after which President Jerry Murphy, of Cleveland, made the following address:

We are, I think, to be congratulated on the happy choice of the association of taking for its meeting place this city of New Haven, rich in its traditions and institutions of learning. That choice, too, besides being a pleasure to each individual member, has the additional point of an almost sure advantage to the association in general.

Not only is the result of higher education here to enable an appreciation which cannot help but encourage, but placed as New Haven is in the midst of municipalities which so generally employ municipal electricians, the advertisement, which the meeting affords, will be most noticed where it will do most good. An effort should be made by all members to see that none of that advantage is lost.

The topics for the papers selected by the committee on arrangements to be read at the meeting are of the utmost importance, and the chair feels that he cannot impress the fact too strongly upon the members. Let us have, too, a thorough discussion of each paper, to bring out and impress every good point of each.

I know that every member will mark the days of this meeting with white stones, in gratitude for the programme which has been provided for us. And in closing I take the opportunity to express for the association its heartfelt thanks to the citizens of New Haven whose appreciative guests we are.

Immediately following Mr. Murphy's opening address, he read the paper on "Advisability of Protecting Municipal Electricians by Civil Service Laws," of which he was the author. This was discussed during the entire morning session.

Will Y. Ellett, of Elmira, opened the discussion. He said:

"We hope to see the day when the superintendent of fire alarm and his assistants won't be under the whim of politicians. But suppose that the civil service law compels a man to pay heavy legal expenses in protecting himself from attack. Does it protect him in that case? If a man has to give a half-year's salary for legal expenses civil service does not protect. The laws should be amended so that when a man is tried and found innocent the expenses of the trial should be paid by the city."

Walter M. Petty, of Rutherford, N. J., moved that a permanent committee be appointed to take charge of the matter and to bring in a report at the next annual meeting on the conditions of the civil service rules. Mr. T. C. O'Hearn, of Cambridge, Mass., thought that some form of protection should be secured by the electricians. J. B. Yeakle, of Baltimore, said: "It will not do for this association to be anything else than an organization based on the intellectual superiority of its members, as far as their proficiency in their work goes. Don't ask for special legislation. Don't descend from the exalted one you now enjoy. The underwriters are now exercising a potent influence on this question and when they see that politicians are determining appointments in the fire department that are interfering they will have something to say on the subject." H. C. Bundy, of Watertown, N. Y., said:

"If you've got a political job, you've got a

political civil service. I think this civil service question is a little too broad for us to tackle just now. Civil service in New York state doesn't amount to anything at all. There you have to pass an examination to get in, but when they say get, you have to 'git.'"

William A. Barnes, of Bridgeport, said: "When politics gets in reason gets out in our fire departments."

A. S. Hatch, of Detroit, spoke of the deplorable condition in which Detroit was without civil service and moved that the proposed committee be chosen. The vote passed and the committee selected were: Messrs. A. S. Hatch, Walter Petty and J. B. Yeakle.

The afternoon session was an interesting one. Reports of the different committees were listened to, many questions asked, and a number of topics were discussed at length.

A. S. Hatch talked entertainingly of the general subject of the trackless trolley. According to Mr. Hatch there is only one trackless trolley line operated in the United States, although the system is working nicely in nearly all of the European cities. In France especially, they have things down to a science. The only trackless trolley line in this country is located at Nantasket Beach, near Boston.

President Murphy read letters from the Western Union and the Postal Telegraph companies and from the Southern New England Telephone Company, extending the courtesies of their several systems to the electricians.

Mr. A. S. Hatch, of Detroit, was elected a life member of the association.

Frank C. Mason, the founder of the association, who was unable to be present, sent a letter of regret, which was read before the convention.

Mr. Walter M. Petty, of Rutherford, N. J., chairman of the Question Box Committee, read questions taken from the box, the accumulation of a year. This was a feature of much interest and elicited considerable discussion.

W. Y. Ellett, of Elmira, N. Y., made a report on aerial construction, illustrating the same by blackboard sketches. He said in part: "In my experience I have found that fire alarm and telegraph wires should always be taut. This is neglected by many superintendents, with the result that constant swinging by the wind causes crystallization near the cross arm. There is no branch of the service requiring more attention than the overhead wiring department."

The discussion of the subject which followed became general and entered into the merits of the question very fully.

An evening session was also held, the first thing in order being the discussion of the national code of rules. Mr. T. C. O'Hearn, the chairman of the committee having the matter in charge, stated that he strongly advised against any deviation from the national code rules on the part of the Municipal Electricians, for the national code is universal. If, however, any change be found

desirable, it should appear in the adoption of subsidiary rules.

Clarence R. George, of Houston, Texas, followed with his paper "Conditions Surrounding the Inspection of Wires in the Southwest, with Special Reference to the Advisability of One Inspector Completing Each Inspection Instead of Several Inspectors, Each Doing a Part of It."

Mr. George said in substance: "The use of electricity for lighting and power purposes is a very new industry. The means of offensive always precedes defense, which is usually a little behind the times, and the older they grow and develop, the nearer they approach equality. This is true of electricity; its first growth was very rapid, and little, if any, care was taken to surround it with even the ordinary safeguards, but, as time moved on, no one seemed to move to the side of defense until along in the early eighties when the New York Board of Underwriters printed its first set of rules for the installation of electric wires.

"It was the practice in those days to staple electric wires the same as bell wires, or to use wooden cleats of the telegraph type; in other words, it was a case of 'get it in,' even in some cases using bare copper wire. It was about this time that the underwriters and those interested in the electric light business were beginning to understand that some steps must be taken to safeguard this new industry, and to protect property and life.

"As they considered the matter from two points—one from the underwriters', on account of the fire hazard, and the other from the lighting companies'—a business standpoint, this soon brought about a co-operation between those interested, and from this co-operation we have the National Electrical Code and Requirements for Electric Wiring.

"While the code is the same everywhere, yet we meet with different rules locally. These differences in some cases are provided by city ordinances, but in the majority of cases it is the result of different interpretation of the code. I have heard it said—and I am of the same opinion—that good workmanship and poor material are far better than poor workmanship and good material, in so far as the fire hazard is concerned."

Mr. George's interesting paper was fully discussed by Messrs. O'Hearn, Yeakle, Hatch, Petty and by Capt. William Brophy, of Boston. The latter spoke briefly on the danger of discarded wires, and of how many deaths such wires charged with electricity had caused. He also spoke of the necessity of grounding secondary wires, and of how difficult it is to secure permission from water companies to do this.

J. B. Yeakle read a paper entitled, "Details of Certain Auxiliaries to Fire Alarm Apparatus." Mr. Yeakle spoke briefly of a special form of light used in signal work at Baltimore, Md., and a long discussion followed.

W. M. Petty, of Rutherford, N. J., spoke on the subject of a municipal plant for gas and elec-

tricity operated successfully by a city of 6,000 inhabitants.

C. E. Bradshaw, of Charlotte, N. C., gave an interesting account of an electrically operated water plant in his city.

The secretary stated that the names of twenty active and three associate members had been added to the rolls during the year.

The proceedings of the second day, Thursday, August 16, began with the question taken from the question box, "What are the Restrictions Made Concerning Wires Strung on Buildings?" This subject opened a wide question of opinion and was thoroughly discussed by Messrs. Brophy, Hatch, Petty, Thompson and others.

Mr. L. A. Gascoigne, of Detroit, started the discussion on underground construction, a theme in which a number of others showed much interest.

At this point the paper entitled "The Comparison of Underground and Overhead Wiring, and the Relative Values of Single Rubber-Covered Wire and Lead Encased Cable," prepared by W. H. Thompson, of Richmond, Va., was read and discussed.

Messrs. W. Y. Ellett, Captain Wm. Brophy, Clarence R. George and Adam Bosch were appointed a committee on exhibits, with instructions to examine and submit a written report covering the displays made by associate members, the same to be incorporated in the printed proceedings.

The concluding session of the convention, on Friday, August 17, was opened by the reading of the report of Treasurer C. E. Diehl, of Harrisburg. The association was stated to be in a good financial condition.

Norfolk, Va., was selected as the next place of meeting, the date to be decided upon by the executive committee.

A nominating committee, consisting of Walter M. Petty, M. J. Donohue, J. B. Yeakle and T. F. Almon, presented the following names for officers of the association, all of whom were elected:

T. C. O'Hearn, Cambridge, Mass., president; James Grant, New Haven, Conn., first vice-president; Clarence R. George, Houston, Tex., second vice-president; John Berry, Indianapolis, third vice-president; W. H. Bradt, Troy, N. Y., fourth vice-president; Frank P. Foster, Corning, N. Y., secretary, and C. E. Diehl, Harrisburg, Pa., treasurer.

Executive committee: J. B. Yeakle, Baltimore; R. A. Smith, Norfolk, Va.; William Crane, Erie, Pa.; Jerry Murphy, Cleveland; W. M. Petty, Rutherford, N. J.; T. F. Almon, St. Louis, Mo.; A. S. Hatch, Detroit, Mich.; W. H. Thompson, Richmond, Va.; G. F. Macdonald, Ottawa, Ont.

Finance committee: L. W. Kittridge, chairman, New Haven, Conn.; C. E. Bradshaw, Charlotte, N. C.; W. D. Claiborne, Savannah, Ga.

New Haven and vicinity present many physical attractions, and to the various points of interest, both within and without the city, the ladies of the party were escorted by the members of the re-

ception committee, organized especially for their benefit. Of course, Yale University, with its multiplicity of noble buildings, came in for first place, but the beauty of the location and the magnificence and extent of the view from the Soldiers' Monument, perched high on East Rock, will not soon be forgotten. Then there were trolley rides in all directions, and one evening a fine band concert was given on The Green, opposite the City Hall. The visit to the National Steel Wire Corporation's plant in which the electricians generally were conspicuous, revealed the process of wire manufacturing on a large scale. The trip to Savin Rock to accept the generous hospitality of the Gamewell Fire Alarm Telegraph Company, of New York, at a "shore dinner," was remarked to be "immense."

The New Haven members of the association, James Grant, aided by his wife, and L. W. Kittridge, were conspicuous in their attentions to the visitors to their city. An apartment was set aside in the City Hall for the display of exhibits.

THE EXHIBITS.

The Gamewell Fire Alarm Telegraph Company, of New York, had an excellent exhibit of its up-to-date boxes, fire alarm and police telegraph apparatus. It made a comprehensive and suggestive showing. The company was represented by N. U. Sureen, J. E. Rogers and H. E. Stover, of Boston; F. F. Stover, of Chicago, and also A. D. Wheeler, of Boston, the New England agent.

The Gamewell Auxiliary Fire Alarm Telegraph Company, of New York, also made a neat display. Mr. H. M. Cross, of New York, general sales agent, and F. Olin Snow, of Bridgeport, Conn., chief inspector of the Connecticut Gamewell Auxiliary Fire Alarm Telegraph Company, were in charge.

The Holtzer-Cabot Electric Company, of Boston, Mass., showed its latest types of motor-generators, plating machines, motors, dynamos, telephone apparatus, watchmen's clocks, batteries, annunciators, etc. The company was represented by E. F. McCobb and A. P. Waterman, of Boston.

The exhibit of the Battery Supplies Company, of Newark, N. J., was in the care of its secretary and treasurer, Mr. E. E. Hudson. An exhibit of batteries was made by the company.

The Leeds and Northrup Company, of Philadelphia, had an exhibit of electrical measuring instruments, which attracted considerable attention because of their portability and handiness.

The Safety Insulated Wire and Cable Company, of New York, was represented by Mr. A. P. Eckert.

Mr. George L. Wiley, New York representative of the Standard Underground Cable Company, was in attendance to show his company's products.

The Corning Glass Company, of Corning, N. Y., was represented by Mr. Frank P. Foster. Among those present were:

Allegheny City, Pa.—E. G. Loomis.

Atlantic City, N. J.—A. C. Farrand.
 Baltimore, Md.—J. B. Yeakle.
 Boston, Mass.—Capt. Wm. Brophy, J. E. Rogers, Harry E. Stover, A. D. Wheeler, T. H. Bibbons, N. U. Sureen, Eugene N. Davis, A. P. Waterman and E. F. McCobb.
 Bridgeport, Conn.—W. A. Barnes and wife;
 J. G. Lay, F. O. Snow and H. D. Miller.
 Cambridge, Mass.—T. C. O'Hearn.
 Charlotte, N. C.—C. E. Bradshaw.
 Cleveland, O.—Jerry Murphy.
 Chester, Pa.—L. E. Emmons.
 Chicago.—F. F. Stover.
 Corning, N. Y.—Frank P. Foster.
 Dallas, Tex.—G. E. Anderson and A. W. Coffman.
 Detroit, Mich.—Louis Gascoigne and A. S. Hatch.
 Elmira, N. Y.—W. Y. Ellett.
 Erie, Pa.—William Crane.
 Harrisburg, Pa.—C. E. Diehl.
 Houston, Tex.—Clarence R. George.
 Indianapolis, Ind.—John Berry.
 Louisville, Ky.—C. F. Gall and P. G. Kern.
 Marlboro, Mass.—Herbert W. Angier.
 Middletown, Conn.—George S. Pitt.
 Montgomery, Ala.—B. A. Blakey.
 Morristown, N. J.—Frank E. Pierson and wife.
 Newark, N. J.—Adam Bosch and E. E. Hudson.
 New Britain, Conn.—George Cooley.
 New Brunswick, N. J.—J. H. Warren.
 New Castle, Pa.—William S. Devlin.
 New Haven.—James Grant and wife; L. W. Kittridge.
 New Rochelle, N. Y.—A. J. Bell and wife.
 New York.—E. C. Chamberlin, H. M. Cross, A. P. Eckert, C. C. Johnson, Fred Pearce, Charles E. Rowe, J. B. Taltavall, wife and daughter, and George L. Wiley.
 Niagara Falls, N. Y.—M. J. Donohue.
 Norfolk, Va.—R. A. Smith.
 Norwich, Conn.—Howard L. Stouton.
 Passaic, N. J.—C. R. Newman and wife.
 Philadelphia.—Julius Bernstein.
 Richmond, Va.—W. H. Thompson, wife and daughter.
 Rutherford, N. J.—Walter M. Petty.
 Savannah, Ga.—W. D. Claiborne.
 Schenectady, N. Y.—J. H. Barnes.
 Stonington, Conn.—A. P. Cooper.
 St. Louis, Mo.—T. F. Almon.
 Taunton, Mass.—Albert Coleman.
 Trenton, N. J.—P. M. Schafer.
 Troy, N. Y.—W. H. Bradt and wife.
 Utica, N. Y.—Terrance F. Marrin.
 Watertown, N. Y.—H. C. Bundy.
 Worcester, Mass.—Vincent Goldthwaite.

Recently a French aeronaut named Lacomte made an ascent from Rueil, but got into difficulties, and the balloon sank so low that it became entangled in some overhead wires. According to the London Globe, the wires were short-circuited

and set fire to the balloon, which collapsed, and the aeronaut was thrown to the ground—fortunately escaping without injury.

The Earthquake at Valparaiso.

The city of Valparaiso, Chili, which, according to advices by wire, has been badly damaged by earthquake, and fears expressed that the catastrophe may be as great as in San Francisco last April, is the most important seaport of the South American republic and the center of trade for a large part of the southwestern portion of that continent. It has a population of upwards of 144,000.

The city is one of progress and energy. It was the first in South America to establish telegraph lines, and its use of gas dates back to 1856. It built aqueducts for a water supply and used street cars in 1860. There, too, were begun negotiations for the construction of the Copiapo railway, which was the first in South America (1849). There the first floating docks for the repair of vessels of large tonnage were constructed in 1860. The first devices for securing a water supply dates from 1849. Recently the storage of 100,000,000 tons of rain water for this use has been effected at a point 15 miles from the city, and 1,000 feet above the level of the sea.

The city of Valparaiso is noted among the South American municipalities for the excellence of some of its public institutions, the Museum of Natural History, Naval Academy, Victoria Theatre and hospitals; large customs warehouses, wharves, substantial buildings for business purposes, commercial and stock exchanges, seven national banks and several foreign or savings banks.

A new interest in the future development of the city had been quite generally associated with anticipations of a route for intercontinental travel and commerce via the Panama canal and Trans-Andean railway from Valparaiso to Buenos Ayres. It is obvious that when the canal and this railway shall have been completed, Valparaiso will have an advantageous position upon the shortest route between the chief seaports of the United States and some parts of Argentina, Uruguay and southern Brazil.

The telegraph and telephone lines were destroyed, and the only means of communication with the outside world was by the cables of the Mexican, Central and Southern American Cable Company, which rendered excellent service. The office of the Central and South American Telegraph Company in the city of Valparaiso was not destroyed, although temporarily the land communication therewith was suspended, although the underground cable connecting the hut with the city office remained intact.

The cables of the Central and South American Telegraph Company are working as usual, as are the company's land line from Valparaiso to Santiago. The company's staff are working day and night, as the congestion of messages since the earthquake has been very great.

Thomas A. Edison Tells the Story of his Career.

"I'll tell you how I happened to get into telegraphing first," said Thomas Edison to a magazine representative. "When the battle of Pittsburg Landing was fought the first report which reached Detroit announced that there were 60,000 killed and wounded.

"I was a train newsboy then, and I told the telegraph operator at the Detroit station that if he would wire the main facts of the battle along the line so that announcements could be put up on the station bulletin boards I would give Harper's Weekly to him for six months free of cost.

"I used to sell about forty newspapers on the trip. This time I made up my mind that I ought to take 1,000, but when I counted my money I found I had only enough to buy 400.

"Then it occurred to me that if I could get to Wilbur F. Story, the proprietor of the Detroit Free Press, I might be able to work out of my difficulty. I climbed up the stairs to his office and said:

"'Mr. Story, I have only got money enough to buy 400 papers, and I want 600 more. I thought I might be trusted for them. I'm a newsboy.' I got my 1,000 papers all right.

"That was a great day for me. At the first station the crowd was so big that I thought it was an excursion crowd. But no; when the people caught sight of me they began to yell for papers. I just doubled the price on the spot and charged ten cents instead of five cents a copy.

"When I got to the last station, I jumped the price up to 25 cents a copy and sold all I had left. I made \$75 or \$100 in that one trip, and I tell you I felt mighty good.

"That called my attention to what a telegraph operator could do. I thought to myself that telegraphing was simply great, and I made up my mind to become an operator as soon as possible.

"The first serious thing I invented was a machine which would count the votes in Congress in a very few moments. It was a good machine, too, but when I took it to Washington they said to me:

"'Young man, that's the last thing we want here. Filibustering and the delay in counting the vote are the only means we have of defeating bad legislation.'

"My next practical invention was the quadruplex telegraph. I started in to work it on the Atlantic and Pacific telegraph line between Rochester and New York, but there was a chump at the other end of the wire and the demonstration ended in a fizzle. It was years before the quadruplex was adopted.

"That landed me in New York without a cent in my pocket. I went to an operator and managed to borrow a dollar. I lived on that for a week, but I had to 'park it' a little. Oh, I didn't mind it and I never did care much about eating, anyhow.

"Then I hustled for something to do. I could have got a job as operator at \$90 a month, but I wanted a chance to do something better. I happened one day into the office of a 'gold ticker' company which had about five hundred subscribers.

"I was standing beside the apparatus when it gave a terrific rip roar and suddenly stopped. In a few minutes hundreds of messenger boys blocked up the doorway and yelled for some one to fix the tickers in their office. The man in charge of the place was simply flabbergasted, so I stepped up to him and said:

"'I think I know what's the matter.'

"I simply had to remove a loose contact spring which had fallen between the wheels. The result was that I was employed to take charge of the service at \$300 a month. I almost fainted when I heard how much salary I was to get.

"Then I joined hands with a man named Callahan and we got up several improved types of stock tickers. These improvements were a success.

"When the day of settlement for my invention approached I began to wonder how much money I would get. I was pretty raw and knew nothing about business, but I hoped that I might get \$5,000.

"I dreamed of what I could do with big money like that, of the tools and other things I could buy to work out inventions; but I knew Wall Street to be a pretty bad place, and had a general suspicion that a man was apt to get beat out of his money there. So I tried to keep my hopes down; but the thought of \$5,000 kept rising in my mind.

"Well, one day I was sent for by the president of the Gold and Stock Telegraph Company to talk about a settlement for my improvements. He was Gen. Marshall Lefferts, colonel of the Seventh regiment.

"I tell you I was trembling all over with embarrassment and when I got in his presence my vision of \$5,000 began to vanish. When he asked me how much I wanted I was afraid to speak. I feared that if I mentioned \$5,000 I might get nothing.

"That was one of the most painful and exciting moments of my life. My, how I beat my brains to know what to say. Finally I said:

"'Suppose you make me an offer.'

"By that time I was scared. I was more than scared. I was paralyzed.

"'How would \$40,000 do?' asked General Lefferts.

"It was all I could do to keep my face straight and my knees from giving way. I was afraid he would hear my heart beat.

"With a great effort I said that I guessed that would be all right. He said they would have the contract ready in a few days and I could come back and sign it. In the meantime I scarcely slept. I couldn't believe it.

"When I went back the contract was ready

and I signed it in a hurry. I don't know even now what was in it. A check for \$40,000 was handed me and I went to the bank as fast as my feet would carry me.

"It was the first time I was ever inside of a bank. I got in line and when my turn came I handed in my check. Of course I had not indorsed it.

"The teller looked at it, then pushed it back to me and roared something which I could not understand, being partly deaf. My heart sank and my legs trembled. I handed the check back to him but again he pushed it back with the same unintelligible explosion of words.

"That settled it. I went out of the bank feeling miserable. I was the victim of another Wall Street 'skin game.' I never felt worse in my life.

"I went around to the brother of the treasurer who had drawn the check and said: 'I'm skinned, all right.'

"When I told him my story he burst out laughing and when he went into the treasurer's office to explain matters there was a loud roar of laughter at my expense. They sent somebody to the bank with me, and the bank officials thought it so great a joke that they played a trick on me by paying the whole \$40,000 in 10, 20 and 50-dollar bills.

"It made an enormous pile of money. I stuffed the bills in my inside pockets and outside pockets, my trousers pockets and everywhere I could put them. Then I started for home in Newark, N. J. I wouldn't sit on a seat with anybody on the train nor let anybody approach me. When I got to my room I could not sleep for fear of being robbed.

"So the next day I took it back to Gen. Leferts and told him I didn't know where to keep it. He had it placed in a bank to my credit, and that was my first bank account. With that money I opened a new shop and worked out new apparatus.

"My automatic telegraph, which handled a thousand words a minute between New York and Washington, was bought out by Jay Gould and the Western Union Telegraph Company. It is in litigation yet.

"Then the quadruplex was installed. I sold that to Jay Gould and the Western Union company for \$30,000. The next invention was the mimeograph, a copying machine.

"When Bell got out his telephone the transmitter and receiver were one. President Orton of the Western Union Telegraph Company asked me to do something to make the telephone a commercial success.

"I tackled it and got up the present transmitter. The Western Union Telegraph Company eventually made millions of dollars out of it. I got \$100,000 for my share.

"At last President Orton sent for me and said: 'Young man, how much do you want in

full payment for all the inventions you have given the Western Union company?'

"I had \$40,000 in my mind, but my tongue wouldn't move. I hadn't the nerve to name such a sum.

"'Make me an offer,' I ventured.

"'How would \$100,000 seem to you?' he asked.

"I almost fell over. It made me dizzy, but I kept my face and answered, with as much coolness as I could muster, that the offer appeared to be a fair one. Then another thought occurred to me, and I said that I would accept \$100,000 if the company would keep it and pay me in seventeen yearly instalments.

"I knew that if I got it all at once it would soon go in experiments. It took me seventeen years to get that money and it was one of the wisest things I ever did. By putting a check on my extravagance I always had funds."

Mr. Edison's deafness is directly due to his early love of science. When he was a newsboy on the train he used to carry on experiments at leisure moments. One day a bottle of phosphorus became uncorked and set the car on fire. The indignant conductor boxed the ears of the youthful scientist and threw the boy and his paraphernalia off the train. It was this box on the ears which caused the deafness which has troubled him ever since.

Interference in Wireless Telegraphy and the International Telegraph Congress.

In concluding the series of articles on "Interference in Wireless Telegraphy," Professor R. A. Fessenden explains a number of tests which he has made to determine to what extent interference may take place between different systems and how this may be prevented. He was able to receive at Brant Rock, thirty miles from Boston, Mass., messages sent from Machrihanish, Scotland, although another station at Boston was trying to prevent this. The latter station succeeded in getting within three per cent. in tune with the receiving station, and had at its disposal about fifteen kilowatts, but it could not render the signals unintelligible. The author does not think that the methods of directing wireless telegraphy which have been published, with the exception of Marconi's, are of any value. He has done some work in this direction by means of a horizontal iron transmitter screened on one side, but a more promising method consists in utilizing a transmitter submerged in distilled water. Water has eighty times the specific inductive capacity of air, and hence with the same apparatus the length of wave is nine times as great and the energy eighty times as great as when used in air. He suggests a copper cylinder placed in a wooden vessel which is filled with water and covered with oil to prevent evaporation. A metallic reflector made of suitable shape may be placed at one side. With a cylinder one foot high, which

would correspond to a cylinder of the same diameter eighty feet high in air and with a reflector 100 feet in diameter, a strong focusing of the waves should be obtained. The article concludes with a suggested method of international working. Professor Fessenden is opposed to government operation whenever it is not absolutely necessary, but he believes that some understanding should be reached and action taken to insure the safety of ocean traffic. This can best be done by the international adoption of two different wave lengths, one for mercantile use and the other for navy and army use. These might be for example 500 amperes and 550 amperes. Private systems should be allowed to operate at any wave lengths they may desire, except within five per cent. on either side of the two mentioned. A separate wave length should not be used for distress signals, for then it would not be likely to attract attention. A proper distress signal would be the repetition of a single letter, which would sooner or later attract attention. The limits set allow for about forty different tunes, which the author believes to be sufficient for practical purposes.—Abstracted by the New York Electric Review from the Electrical Review (London), July 27.

Pen vs. Typewriter.

F. M. McClintic, of New York, in a recent article in "Office Appliances," had this to say on the subject of pen vs. typewriter:

Although there were many errors—amusing, perplexing or otherwise—in the old days of the pen, the typewriter, with its high speed, coupled with lack of intelligence in the use of code and the greater business of the present day, has increased the average of errors ten-fold. Transposition of letters, lack of punctuation and various other causes contribute to the troubles that the law departments of the telegraph companies are eternally wrestling with. When a man orders a case of fresh fish and receives a car of fish instead, he goes after damages. It is safe to say that such an error is the result of poor writing or carelessness on the part of the sending operator, and the typewriter, if more generally used, would tend to lessen the number of such mistakes. Lack of punctuation, perhaps, causes the recipients of telegrams more vexation these days than even the heartbreaking delays that sometimes occur. In the crowded condition of overland wires every conceivable method of saving time and getting rid of the business is taken advantage of. Although the use of code in commercial work is strictly forbidden, the rule is little regarded and the shape in which "bonus" work is sometimes literally lumped and thrown at the other end of the wire would cause the expert penmen of the days of Edison, Phillips, De Graw, Boileau and others to gasp in amazement. The company is not required to transmit punctuations unless they are

paid for—something which is rarely done. So, in the haste to "get clear" when the operators omit all punctuation, as will be shown by the following example, the officials do not complain.

Here is an original sample which came under the writer's notice: "We are happy wish you were here cold much love." Before this telegram dropped into the vortex of lightning it was punctuated like this: "We are happy. Wish you were here. Cold. Much love."

An error that is very common in New York is the transformation of the name of Theodore Price into "The Order Price." When an operator's mind goes "woolgathering" he copies mechanically; hence it is his brain and not the typewriter which is responsible for such mistakes as these.

A New York brokerage house received some "gossip" from Chicago reading: "There is a certain element in the market working quietly to 'kag' the 'kig' shorts." This was another instance of bad writing, for which the typewriter was not to blame. The correct reading was: "There is a certain element in the market working quietly to 'bag' the 'big' shorts."

Bryan on Ownership of Public Utilities.

It is stated that Mr. W. J. Bryan, former Democratic candidate for the Presidency on a silver platform, will on his return to this country advocate a modified scheme of State ownership of utilities, says the Electrical World. One of the many striking impressions, it is said, that have come to Mr. Bryan on this tour has to do with the ownership of the great public utilities by the State, with special reference to the railroads. Mr. Bryan has been in Europe on other occasions and examined the conditions surrounding the Government management of the larger arteries of travel. In one very important particular he would apply the theory differently to the United States. His plan would admit of the ownership of certain trunk lines by the general government in order that the efficient through services should not in any way suffer impairment, but he would insist that the local lines in every State be owned by the separate States, thus preserving more effectually the idea of State individuality, which, in Mr. Bryan's opinion, would in time be wiped out if all lines passed into Federal control. The enormous patronage that would be the result of such a railroad management in America would, of course, tend to intrench the party in power and would in time accomplish what Mr. Bryan fears and would contend against—the abolition of State boundaries. It is no part of Mr. Bryan's intention at this time to take up the trivialities of public ownership. He is said to be considering the subject in its broadest aspect, developing at the same time an entirely new feature—that of individual State ownership. This feature is, however, by no means new, and every State that has owned railroads has either sold them or is wishful of doing so.

Pupin's Application of Resonance to Multiplex Telegraphy.

When a certain number of simple harmonic electromotive forces are impressed upon a line conductor, then a branch line may be adjusted so that it will offer a very much smaller impedance to one of these electromotive forces than to the others. This will take place when the natural period of the branch is the same as that of the selected electromotive force. Upon this physical fact, known as "electrical resonance," Dr. M. I. Pupin, the well-known professor of mechanics in Columbia University, New York, has based an ingenious system of multiplex telegraphy, for which he was recently granted a United States patent.

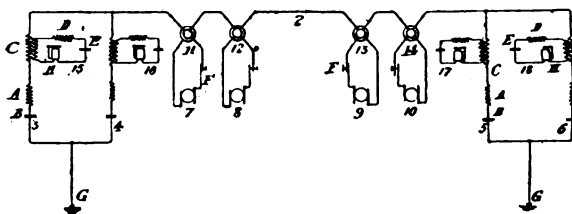
To produce electrical resonance between a circuit and an impressed electromotive force, the electromagnetic constants of the line—that is, its self-induction and electrostatic capacity—must be adjusted according to well-known rules. A resonating line is selective. The possibility of attaching to a main line a certain number of selective branches enables the foregoing principle to be applied to multiplex telegraphy. In practise, however, certain serious difficulties appear. These are, first, that the selective power of an electrically tuned branch circuit forming part of a system diminishes materially with the increase in the number of branches from the main conductor, and, second, that when there are several complex harmonic electromotive forces impressed upon the system the upper harmonics of one may come with the frequencies of the fundamentals of the others, especially if more than three or four frequencies be employed, with consequent confusion.

The invention consists, first, in the method of and apparatus for throwing upon a main line a number of alternating currents of different frequencies; independently of each other, and distributing the energy of these several currents each selectively to a separate electrical translating device; second, in an electrical system wherein one or more induced circuits may be tuned in electrical resonance respectively with the impressed electromotive forces of different periodicities and this independently of one another and of all the rest of the system to which they belong; third, in the method and apparatus for converting a complex harmonic electromotive force impressed upon an electrical system into a simple harmonic electromotive force; fourth, in the construction and arrangement of the multiplex telegraph.

Referring to the accompanying diagram, (7), (8), (9) and (10) are alternating-current generators giving four electromotive forces of four different frequencies. These generators are connected to the primary circuits of four transformers (11), (12), (13), (14), independently of each other and simultaneously or otherwise. The secondary circuits of these transformers form part of the main line (2). The cores of the transformers are of finely laminated iron and form closed or very nearly closed magnetic circuits. This

fact is one of the important features of the invention.

Connected to the main line (2), and to the ground (G) are four branches (3), (4), (5), (6). Each one of these branches, as (3), has a primary coil (C) and another coil or coils (A). The coil (C) is called the active coil, and the coil (A) the auxiliary coil. Also in each branch is a condenser or condensers (B). The number of auxiliary coils and condensers in each branch may be any number, all of them connected in series. Each branch is placed by means of the active coil in inductive relation to a secondary circuit. Thus, for instance, the branch (3) is in inductive relation to the circuit (15), which includes a coil (D) of large and adjustable self-induction, a condenser (E) of suitable capacity for telegraphic purposes, and any suitable apparatus (H) which serves to indicate a current in this circuit by means of an electromagnetic, electrochemical, or electrostatic effect. Four keys (F) serve the purpose of making and breaking or simply varying the strength of the generator current. The four generators



(7), (8), (9), (10), with the transformers (11), (12), (13), (14), and the keys (F) constitute the outfit for the four sending stations. The four branches (3), (4), (5), (6), with their four secondary circuits, constitute four distinct receiving stations.

The method of operating is as follows: Let the frequencies of the generators at the sending stations be, respectively, 600, 520, 440 and 360 periods per second. The branches (3), (4), (5), (6), being at the receiving stations are adjusted by means of the condensers (B) and the auxiliary coils (A), so as to be approximately in resonance with the frequencies aforesaid, respectively. These branches are adjustable independently of each other. The secondary circuits (15), (16), (17), (18) in each receiving station are put in perfect resonance with these frequencies, but in such a way that the resonance balance of any one of these branches is entirely independent of the physical constants of the branches themselves or the line or any of the other secondary circuits and depends solely upon the self-induction and the capacity of that secondary circuit alone. This is accomplished by making the auxiliary adjustable coils (D) of so large a self-induction that the self-induction of each secondary circuit is practically equal to the self-induction of its auxiliary coil. The capacities are then adjusted ac-

cording to the well-known rules in order to produce resonance with the frequency at which each receiving station is intended to work.

By keeping down the resistance of the secondary circuits, and by avoiding the use of iron in the auxiliary coils of these circuits they can be made easily to respond a thousand times more strongly to the frequency to which they are tuned than to any other frequency, and this independently of whatever variations in the electrical constants may be going on in the other parts of the system.

Suppose now that the four generators at the sending stations impress simple harmonic forces upon the line and that the primary circuits are closed, there will be electromotive forces of the above frequencies impressed on the line, and hence alternating currents of like frequencies, respectively, on the secondary circuits at the receiving stations. If the primary current from, say, generator (7) is interrupted, then the current in the corresponding branch—say (3)—will also be interrupted, whereas the currents in the other branches at the other receiving stations will not be affected. Hence if an operator works a key, as (F), the sounder (H) in the secondary circuit (15) will be operated, but not the sounders in any of the other secondary circuits.

It is evident that any number of transmitting and receiving stations can be working simultaneously on the same line, without disturbing each other. The limit to this number will be determined by the limiting frequencies at which the lines can work. On a line, say, 500 miles long, the highest frequency will probably be 600 periods per second, and the lowest 40. Any frequency employed should be at least 15 per cent. of its own value distant from the next higher and the next lower frequency, so that a line 500 miles long could be worked conveniently at from 12 to 16 different frequencies, and therefore have 12 to 16 transmitting and receiving stations. This is, however, on the supposition that each transmitting station sends a simple harmonic electromotive force or current. It is, however, practically impossible to produce alternating-current generators capable of giving such a force. As a rule, they give alternating electromotive forces in which the upper harmonics, especially the third and the fifth, are of nearly the same order of magnitude as the fundamental. Hence, although the fundamental frequency of any one of the sending stations does not come within the proximity of the frequency of any other station, the harmonic will, especially when the line is worked at more than three or four frequencies.

The inventor uses a transformer whose iron core forms an ordinary closed magnetic circuit which when worked at saturation of between 1,000 and 15,000 c. g. s. lines of force per square centimeter, will give in the secondary circuit a simple harmonic electromotive force whose frequency is equal to the fundamental frequency of the impressed electromotive force, no matter how complex the impressed electromotive force may be.

This is especially true if the fundamental frequency is not below 35 periods per second, and if magnetic leakage is encouraged by arranging the primary and the secondary circuit in such a way as that they do not overlap, somewhat in the fashion of constant-current transformers employed for alternating-current arc lighting.—*Western Electrician*.

The Police Telegraph Bureau.

The telegraph bureau at police headquarters, Mulberry street, New York, is located in the basement of the building, and is a busy place. Outside of those immediately interested and who know the happenings there, day by day, the outside world has a very small knowledge of its existence. Yet this bureau constitutes one of the main auxiliaries of the police establishment of this great city. The importance, therefore, of placing only men in charge who are thoroughly competent to perform the duties placed upon them is obvious. This requires the services of men of training, of quick judgment and ability to handle any kind of a case that presents itself. The staff is made up as follows: Michael R. Brennan, superintendent; Edward H. Murphy, assistant superintendent; John Altenbach, Maurice J. Coughlin, William A. Coleman, Patrick H. Devary, Dominick Henry, John J. Lonergan, John J. Mangin, Lawrence P. Hines and Thomas Williams, sergeants. With them are Patrolmen John Dunn, John J. Bowes, Francis C. Murphy, Michael McGrath, James McMahon, James McKenzie, Cornelius Maher, Frank Neuberth, George Peterson, William Ryan, Michael McCarthy and Sergeant Richard Battin.

It is in this telegraph department that virtually the entire police business is handled. The switch board is known as the "Six Sections," and there are one hundred and eighty plugs. Some idea of the work that they do can be gathered from the fact that in one month last winter no less than 4,965 calls were received, and that is comparatively small with the number received during the summer months.

There is an average of two hundred ambulance calls received daily, each one of which calls for immediate action. The instant such a call is received a "plug" is connected with the nearest hospital and an ambulance sent to the scene. At practically the same moment the police precinct which covers the territory where the crime, if it is a crime, has been committed is notified and detectives and uniformed men are quickly on the scene.

Besides knowing how to "handle" a story, every man in the bureau must be a walking directory. Not only has he to know the boundaries of every precinct, but he must know every street in the city in order that no mistakes can be made in calling up the wrong precinct or hospital.

You can't afford to be without **TELEGRAPH AGE**; \$1.50 a year.

Good Telegraph Service.

BY D. McNICOL,

Manager Postal Telegraph-Cable Company, Butte, Mont.

Advocates of government ownership of the telegraph have recently made considerable use of the statement attributed to an eminent United States Senator, that the telegraph is the "rich man's mail."

It is common knowledge, probably familiar only to telegraph officials and employees, that this statement is true only in a social sense. They know that there is daily handled by telegraph vast volumes of correspondence, which, if it were not possible to transmit and be acted upon quickly, thousands of middle-class business men would not be able to carry on their various enterprises. The present comparative efficiency of the telegraph service has made it possible for thousands of ordinary business men to operate at long range and with the consequent expansion of the field of operation, to become rich.

Good telegraph service, from the standpoint of the telegraph man, has, through organization and intelligent operation, become a concrete undertaking. Notwithstanding desultory complaints on the part of the public regarding inefficiency, the service furnished is as good as is possible when one fully considers the incongruous conditions involved.

While this is true it is also a fact that those who should be the least satisfied with the existing service, are the telegraph people themselves. This view put into practise would not noticeably mitigate the great unrest, but would surely make for progress and betterment. There should be no such diversion as resting on the oars. He who does so in the telegraph business gives evidence of a belief that the service is all that it can be. Conditions to-day may be incongruous, but to-morrow we may have an opportunity to take advantage of changes, natural or otherwise, which will enable us to better the service, if not permanently, then temporarily, but always in the line of advance, and give us new footholds.

Among those features which constitute good telegraph service, ordinarily, are the following: Courteous treatment of patrons; prompt attention at receiving counters; correct understanding of the message to be transmitted; prompt transmission of matter filed by patrons; personal interest in each dispatch handled to insure accurate transmission; neat typewritten copies of messages received for delivery; prompt delivery, and proper receipts for telegrams, showing time of delivery.

It is common knowledge to telegraph managers that one of the greatest obstacles to the fostering of a greater volume of telegraphic correspondence is the great number of errors made by operators in cipher telegrams of business firms using code. The writer for quite a period made a close study of the causes of errors, and deduced positively that the human element of laziness is to blame for

the larger number of telegraphic errors. Possibly, also, professional pride of operators who wish to establish a record for not breaking, contributes to the vicissitudes of the solicitor for business, and who has to listen to the complaints of customers.

An operator receiving by typewriter generally locates himself in a comfortable position, chair tilted back, etc., so that he is generally far enough away from the key on the telegraph table to make it physically inconvenient to "break" when he is in doubt about a word. This frequently results in his taking chances on the correctness of a word, especially code or cipher, when he would not take such chances if he could break the sender without altering his position and with the minimum of physical effort. To make the latter condition possible, the writer recently rigged up a device for attachment to ordinary typewriters which consists, simply, of a break key connected by cord and wedge to the table key. The break key is clamped to the lower right-hand frame of the typewriter. This gives the receiving operator a key to break the sender without having to reach for the table key. The observed result is that the receiver "breaks" the sender every time he is in doubt, and an element is introduced which at least, certainly lessens the number of telegraphic errors. A great many operators take considerable pride in their reputation for not breaking, and rather than smirch their reputation as a good receiver, they will take a long chance very frequently.

Operators, especially the younger men, should understand that if they wish to establish records as good operators, the proper place to build up a reputation is with the management, not with the operator at the other end of the circuit.

A certain "sender" may be convinced that a certain "receiver" is as good as ever punched a "mill," but the correspondence in the claim files of the superintendent's office frequently makes it clear that the supposed expert is about as poor an operator as there is in the service. The great number of service messages called forth by errors in transmission is evidence sufficient that there is need for less speed and more care in the handling of cipher telegrams.

Legal.

Judgment for \$19,404 in favor of the State of Arkansas was entered August 4 against the Western Union Telegraph Company for failure to file amended articles of incorporation in that state. The state's contention was that the company paid only \$596 as a filing fee on its articles and that subsequently it increased its capital stock and became liable for \$19,404 in fees to the state. The company's demurrer was overruled and judgment was then entered upon the defendant's refusal to plead further. An appeal was taken to the supreme court.

You can't afford to be without TELEGRAPH AGE.

Telephones in Railway Work.

It was not many years ago that the availability of the speaking telephone as an adjunct to the Morse telegraph system in the despatching departments of great railroad systems was looked upon with considerable skepticism, remarks the *Electrical Review*. The trained operator and ever-careful despatcher held that there was too much danger in a misunderstanding of the spoken words, and, that in the hurry and enthusiasm of a direct conversation, mistakes might be made which could only result in disaster. The practise of transcribing into long hand and recording permanently upon data sheets telegraphic communications seemed to indicate an almost infallible system—one which was surely very much more secure than that which depended upon the retention in one's mind of the spoken message. The telegraph, it was held, reduced matters to a nicety and whatever message there was to be transmitted, conciseness and directness were essential characteristics.

To-day, however, the telephone is a recognized factor of considerable importance on more than one large system of steam railroads. While it is not entering very largely into the despatching department, it is almost wholly used for intercommunication between railroad officials, freight agents, division superintendents, and between the public and all of these different departments. It is a matter of fact, also, that in many emergencies the telegraph system is almost wholly cut out and the communication established over telephone lines. In a recent issue of the *Railway Age*, the telephone equipment of the Burlington system is described. The Burlington system is operated under two grand divisions—the lines east of the Missouri, with headquarters at Chicago, and the lines west of the Missouri, with headquarters at Omaha. Each grand division is controlled by a general manager, reporting to the vice-president. The grand divisions are each further separated into semi-grand divisions under the control of division superintendents. There are four private branch exchanges in Chicago connected with exchanges at Aurora, Galesburg, Burlington and West Burlington. For the most part the lines are full copper metallic circuits, the copper wire weighing 210 pounds to the mile. This copper circuit is quadruplexed—that is to say, in addition to the telephone circuit it also furnishes a "quad" telegraph circuit. Besides the copper circuit there is, between Chicago and Aurora, an iron circuit which carries a standard composite equipment giving a single telegraph circuit for each wire of the pair, and a telephone circuit over the pair of wires, making three available circuits from a single pair of wires.

The officials of the traffic department are in regular communication with the local men of the department with regard to securing business, and information of this kind can be obtained by conversation over the telephone, where, by telegraph, considerable correspondence would be necessary

and much delay experienced. The question of supplies is an important one, and in the handling of merchandise orders this can be done to much greater advantage by telephone than by telegraph.

The operating department makes use of the circuits, especially in that the Chicago despatcher can arrange freight service with division points. In this class of service the railroad can not arbitrarily run regular trains, but must arrange the service according to the business in sight. Trainmasters and despatchers regularly twice a day discuss these questions and arrange their business accordingly. It is stated that by the use of the telephone on this division the road saved running ten train crews over a considerable distance in one month. This meant quite a saving in cash.

Many other uses of the telephone for railroad service could be mentioned. The addition of the telephone circuit along the right of way makes available the use of a portable telephone set carried upon the train. In many instances the conductor has been able, by hooking in, to get in communication with the despatcher's office and run around an obstruction, when, if the telegraph alone were available, he would have had to wait for orders from the nearest point at which a telegraph office was located. Again, in case of accident, the telephone may be used with distinct advantage, in that detail can be properly attended to, which, with telegraphic communication, would involve a very much greater length of time and the ever-present possibility of unfavorable consequences.

The Stock Quotation Company to Erect its Own Building.

The Stock Quotation Telegraph Company of New York, of which W. H. Hurst is president, lately acquired the property No. 26 Beaver street. The company already owns No. 28, adjoining, which, together with the recent purchase, makes a plot 53.4 x 56.2 x 55.2 x 50.1, running through to Marketfield street. It is understood that a new building will be erected for the exclusive use of the Stock Quotation Telegraph Company's executive offices, and of the various departments comprised within this company's plant. The work of construction will begin when the present leases expire, which will be about two years hence. The Stock Quotation Telegraph Company embraces the New York News Bureau, which collects and disseminates financial news on tickers. It also prints the Wall Street Summary, the leading financial paper. It owns the Hamilton Press, which will have in the new quarters one of the very best equipped printing plants, including bindery, in the country.

A Sinecure.

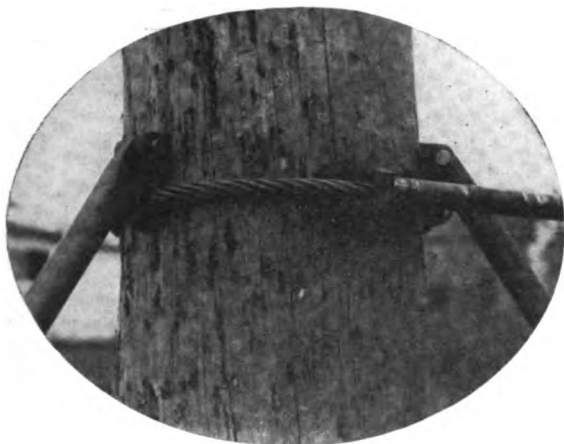
Beery: If you was lookin' for the easiest job wot is, Weery, wot'd it be?

Weery: Lineman on de wireless.

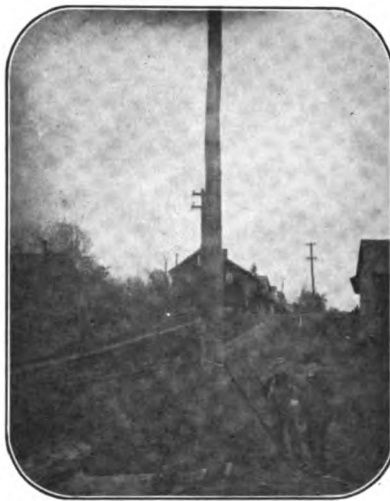
Soseman's Pole Splicing Device.

One of the great sources of expense incident to maintaining a telegraph or telephone line is the necessity for frequently replacing the lower sections of the poles, or the parts embedded in the ground, which become so weakened by the action of moisture thereon as to not furnish a proper support for the upper wire-carrying por-

cost of maintenance of a telephone or telegraph line may be materially reduced. In carrying out his method provision is made for an adjustable support, by means of which the pole can be firmly maintained in an upright position while the necessary excavation is made about the base and while the rotten or otherwise damaged lower part is removed and replaced by a sound stub.



VIEW NO. 1—SHOWING CABLE GRIP.



VIEW NO. 2—THE TRIPOD.

tion. In a majority of cases when a pole has to be replaced the larger part thereof is perfectly sound and could be used for an indefinite time, if the lower section could be restored to its original condition.

Mr. J. D. Soseman, of Monroe, Wis., has invented a method of repairing such poles which

View number 1 shows a cable grip constructed in such form as to securely engage a pole as to support not only its own weight but any load it may be carrying. Placed at an equal distance from each other upon this cable, are, preferably, three metal blocks, each of which engage the upper end of the top section of the leg which ex-



VIEW NO. 3—SHOWING PARTS TEMPORARILY SECURED WITH CLAMP.



VIEW NO. 4—SHOWING COMPLETED SPLICE.



VIEW NO. 5—SHOWING POLE BROKEN OFF.

promises to afford relief in the particular complained of. It consists in substituting for the lower damaged end of the pole a stub of proper length, which may be firmly secured to the body of the pole. Material suitable for such stubs can be readily had at a very small expense, and by following the plan devised by the inventor the

tends downward and outward from the axis of the pole, thus forming a tripod as shown in view number 2. The leg is formed in two main sections of metal tubing, the lower section to telescope the upper. The lower section of the leg is provided with a jack or lifting screw, which telescopes into the lower end thereof. The lift-

ing screw is connected by ball and socket joint with a base block or shoe which rests on the ground, as shown in view number 2.

It will readily be seen that with this device in position, by the turning of the lifting screws the weight of the pole and its load will be thrown on the tripod, and securely held in position, even if the decayed stub be severed and removed. A series of holes or perforations have been placed through the lower section of tubing for the insertion of a metal pin in cross section, which forms a rest for the lower end of the upper section of the leg. By the shifting of this pin the length of the leg is adapted to any unevenness of the ground.

Preferably in the application of this pole-splicing device it may be remarked that after the stub and necessary tools are on the ground it is best to excavate, thus revealing any lateral pull on the pole, and which can be provided for with a temporary guy.

The saw for severing the pole can now be established, starting it from a mitre gauge previously set to the stub and then transferred to the pole. After the saw has become embedded in the wood, remove the mitre gauge and then place the tripod as shown in view No. 2, causing it to take the weight of the pole. Then sever the stub and replace it with the new one, se-



VIEW NO. 6—THE LEVER

curing the two parts in proper position temporarily with clamps, as shown in view number 3. The pole can now be permanently fixed in the ground, when any of the well-known methods of splicing can be employed.

In case a wrapped splice is preferred, fasten the end of the wire securely at the lower end of the splice, passing the wire around the pole, thus forming the first coil; drop the wire between the jaws of the lever (view number 6), place the end of the lever against the pole, which will act as a fulcrum, and then with a steady pull the coil can be securely stapled under tension. The remaining coils are simply a duplication of the first. The clamps can be shifted or removed as the wrapping progresses.

The amount of tension is limited only by the strength of wire, and as this lever neither cuts or kinks the wire, the maximum strength is obtained. View number 4 shows the pole after the splice is completed. It also shows the same pole after having been subjected to tension parallel with the faces of the splice, thus giving it the severest test. These stubs can be procured from cull timber and sawed to a standard gauge, say seventeen degrees from the axis of the pole,

and, of course, can be kept in stock, thus lessening the number of poles carried. The amount of labor necessary to make this splice will be that of three men for from one and a half to four hours, depending on environment and size of pole.

Poetic Telegraphy.

A dot and a dash is letter A,
A dash and three dots is B, they say:
Two dots, a space, and then a dot,
Is letter C, if not forgot.
A dash and two dots is letter D,
A simple dot and such is E,
A dot, a dash and a dot for F,
Two dashes and a dot and G is clef.
For letter H the dots are four,
Two single dots and I is o'er;
Dash, dot, dash, dot for letter J,
Dash, dot, dash makes letter K.
One long dash is for letter L,
Two little dashes and M is well;
Now make a dash, a dot, and then,
The wire has spoken the letter N.
A dot, a space and a dot for O,
Five dots will do for P, I know;
Two dots, a dash and a dot for Q.
For R, a dot, a space and two dots will do.
Three dots is S, one can easily see,
And a simple dash is for letter T;
Two dots and a dash make letter U,
Three dots and a dash, and V is through.
Now dot and dash, and dash again,
You bring poor W into the game;
I know these dots and dashes do vex,
But it takes a dot, a dash and two dots for X.
Now, dear alphabet, 'tis soon goodbye,
Two dots, a space and two dots for Y;
And here's my best regards to thee,
Three dots, a space and a dot for Z.

—The Railroad Telegrapher.

English Post Office Telegraph Report.

The annual report of the postmaster general, which has just been issued, shows that, during the year ended March 31 last, 89,478,000 telegrams were transmitted, an increase of .57 per cent.

The total telegraph and telephone revenue for the year was £4,151,380, an increase of £231,357, and the expenditure was £4,906,087, an increase of £66,628. The net deficit on the joint service was therefore £754,707, or £164,729 less than in the previous year; but allowing for the interest on the capital expended on the purchase of the telegraphs, the telegraph deficit becomes £1,033,190 (\$5,166,000).

Mention is made of the tentative use of high-speed automatic type-writing telegraphs, which have been fairly successful.

During the year the postoffice dealt with 11,652 Marconi messages, of which 558 were outward and 11,094 inward.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

WASHINGTON, D. C., WESTERN UNION.

Mr. James Breen, an old timer, is in the Emergency Hospital with a broken leg.

J. Wilber Bender, who has been ill for almost four years, and who for the past six months has been in the Garfield Hospital, has improved and has been removed to his home.

Raymond Dickey, of the night force, has moved his law office to the Kellogg Building. He is a capable young lawyer and has won considerable success.

"Jack" Riley is acting traffic chief during the absence of Mr. J. F. Hahn.

W. B. Harveycutter is on repeaters, and Reuben Haywood is traffic chief on South.

Garrett Mothershead, son of our day receiving clerk, has secured a place in the office of the Southern Railway.

Mr. Frank P. Oliver has resigned as manager of the Southern Railway telegraph office. He goes to Philadelphia for the telephone company.

Mr. D. W. Davis is acting manager in Mr. Oliver's place.

CHICAGO, WESTERN UNION.

During the absence of Fred. Gardner in California, his work is being performed by Frank Crittenden, division chief.

Fred. E. Green, of this office, died recently in the Cook County hospital from an operation for hip disease.

Fred. Latourneau has returned to his post again after a severe siege with inflammatory rheumatism, which laid him up for several weeks.

William L. Moore had a narrow escape from blood poisoning caused by a scalp wound. It will probably be several months before his return.

Edward E. Newman of the Cincinnati division, nights, has been appointed to a position in the quadruplex room, under Arthur Galey.

Mr. C. H. Finley and wife and Dr. Cunningham and wife spent a pleasant outing among the lakes of Wisconsin.

Thomas Brandon is back again from Mexico and announces his determination to remain here in future.

Mr. Edward Wells, wire chief, and Mrs. Will Paddock, widow of the late Will Paddock, of this office, were married recently.

Frank L. Titus, formerly of this office, and now of the Santa Fe system, Fort Madison, Iowa, was a visitor here a few days ago.

Harry Stoner, an old timer of this office, suffered a stroke of paralysis several months ago, and his condition is now reported to be very critical.

Messrs. Charles Case, chief of the St. Louis division, nights, and Harry Lyons of the same division, have successfully passed the state board examinations for dentistry.

Otto Enking, chief of the Illinois division, is back again from a vacation.

Chief Operator L. K. Whitcomb is off on his summer outing.

Raymond T. Donovan, formerly of this office, is very ill at his home.

NEW YORK, POSTAL.

The New York Telegraphers' Outing Club held its second annual outing at Boehm's picnic grounds, New Dorp, Staten Island, August 12. There was a varied and attractive programme of entertainment, a good dinner was served, and a general good time caused the hours to pass away all too quickly.

Julien Soule, an operator in this office for many years, died August 12 in the hospital at Wilmington, N. C.

Mr. D. C. Donohue, Jr., an operator and stenographer in the executive office, has resigned to engage in other business.

Mr. J. H. Twyford, formerly of this office, is again with us, having been transferred back to his old quarters and appointed quadruplex chief. Upon his departure from Atlanta, Ga., where he was chief operator, the office force presented him with a handsome ring suitably engraved, which was highly appreciated.

NEW YORK, WESTERN UNION.

Mr. Frank Turner has returned to duty after a long period of sickness.

Miss Julia Gilman has resigned and will be married on September 3 to Mr. John Hannigan, member of the New York fire department.

Mr. J. S. Nance, of the Boston wire, has resigned on account of ill health, and returned to his home in Atlanta, Ga.

Mr. Thomas Brennan has returned from his vacation.

Mr. T. A. McCammon, chief operator, is away on his vacation.

At the Creedmoor Rifle Range, on Thursday, August 23, Joseph M. Winder, Ralph Johnson,

Twenty-second Regiment engineers, and Roscoe Johnson, Second Signal Corps, operators of this office, qualified as marksmen.

Mr. J. H. Edwards of this office has been assigned to the Atlantic City, N. J., office for the season.

OTHER NEW YORK ITEMS.

Mr. Albert J. Macdonald, a telegrapher of Adelaide, South Australia, who has been in this country for some time past, is spending several days at Poughkeepsie, N. Y. He will sail soon for home, going thence by the way of England.

Mr. George W. Blanchard, until a few months ago, superintendent of the Postal Telegraph-Cable Company, New York, who resigned to enter the real estate business, is meeting with excellent success in his new undertaking.

Assessment No. 453 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of Charles E. Gray, at Brooklyn, N. Y.; Philip G. Hess, at Baltimore, Md.; Cornelius Dwyer, at New York, and Howard S. Larcombe at Beltsville, Md.

The quarterly statement of the New York Telegraphers' Aid Society, for the quarter ending June 6, 1906, is as follows:

Balance on hand March 6, 1906.....	\$19,412.60
Receipts to date.....	1,466.00

Total	\$20,878.60
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Disbursements	\$ 1,716.06
Balance on hand June 6, 1906.....	19,162.54

Total	\$20,878.60
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Relief Fund.

Balance on hand March 6, 1906.....	\$4,567.01
Receipts	42.50

Total	\$4,609.51
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Disbursements	\$ 767.85
Balance on hand June 6, 1906.....	3,841.66

Total	\$4,609.51
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Note.—The relief disbursements include \$500 donated to the San Francisco Telegraphers' Aid Society to relieve the distress of members due to the earthquake.

Balances.

Aid Society...\$19,162.54	On deposit...\$22,938.20
Relief fund... 3,841.66	Cash on hand 66.00

Total	\$23,004.20	Total	\$23,004.20
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J. H. Driscoll, F. D. Murphy and W. T. Rogers, auditors.

Recent New York Visitors.

Mr. Frank P. Foster, Corning, N. Y.

Mr. A. G. Douglas, a well-known Milwaukee, Wis., telegrapher.

Mr. A. T. Maxwell, now in the telephone service at Memphis, Tenn., and a brother of L. J. Maxwell, superintendent at Richmond, Va.

Mr. J. B. Yeakle, superintendent of fire telegraphs, Baltimore, Md., and vice-president of the Old Time Telegraphers' and Historical Association.

Book Notice.

The Standard Underground Cable Company, of Pittsburg, has issued its handbook, No. 17, the compilation being done by Joseph W. Marsh, vice-president and general manager of the company. This volume of 230 pages, bound in cloth and profusely illustrated, while primarily constituting the price lists, telegraph code and other useful data relative to bare and insulated wires, and cables, manufactured by the concern named, it nevertheless possesses a value wholly apart from simply giving the price of material, etc.; for the work is a handbook in the sense that it affords a fund of general information covering a wide scope of subjects of interest in the telegraphic world and among electricians as a class. To the customers of the Standard Underground Cable Company, the work is intended for gratuitous distribution, but to all others a charge of fifty and seventy-five cents and one dollar will be made, according to binding.

Wood Pole Tests at Hull, England.

Recently a series of important tests were carried out at Hull, Eng., to ascertain the breaking strain and deflection of a given load of wooden telegraph poles and also any permanent set after the bending. The arrangements were made by Mr. Christopher Wade (director), and the tests were undertaken with the approval of the Board of Trade and by the desire of several large users both of ordinary telegraph poles and of those adapted for overhead electric power lines. The tests were made under the supervision of Prof. Goodman, of the Leeds University, and among those present were representatives of the railroad, telegraph and electrical interests. The tests were carried out on double and single poles, and in one case a single forty-foot pole was bent to the extent of fourteen or fifteen feet out of the straight like a huge bow, before exhibiting signs of strain or fracture. The complete results of the tests will be embodied in a report, copies of which will shortly be ready. Several interesting photographs were taken during the proceedings.

Orders for books on telegraphy, wireless telegraphy, telephony, all electrical subjects, and for cable codes, will be filled by TELEGRAPH AGE on the day of receipt.

Important Subjects Treated in Back Numbers.

TELEGRAPH AGE has published the best articles on telegraphic subjects that have ever appeared in print. Herewith are enumerated a few of the most important subjects treated, together with the date of the papers containing the same. Copies of these back numbers may be had at twenty-five cents apiece upon application. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

Adjustment of Relays and Sounders.....	Oct. 1, 1902
Alternating Current Transformer for Quadruplex, W. H. Jones, Mch. 1-16, 1904	
American Cable Across the Pacific.....	July 16, 1903
Alaskan Telegraphs.....	Jan. 1-16, Feb. 1, 1905
Atmosphere and Earth Electrical Conditions, E. C. Walker, Dec. 16, 1904	
Aurora Borealis, The.....	Nov. 16, Dec. 16, 1903
Autopex, The.....	Feb. 1, 1903
Barclay's Combination Quadruplex Rheostat.....	July 1, 1903
Barclay's Direct Repeating Relay for Multiplex Circuits.....	July 16, 1902
Barclay's Printing Telegraph System, W. H. Jones.....	May 16, 1905
Barclay's Repeating Relay, Main Line Relay and Box Relay, Jan. 1, 1903	
Barclay Typewriting Telegraph System.....	Jan. 16, 1904
British Patent Office Rules.....	Apr. 16, 1905
British System of Timing Messages.....	Dec. 1, 1902
Buckingham Long Distance Page Printing Telegraph.....	Sept. 1, 1902
Burry Page Printing Telegraph.....	Apr. 1, 1903
Cables and Russo-Japanese War.....	Apr. 1, 1904
Cable Station in Mid-Pacific, Our, Dr. Martin Crook.....	Feb. 16, 1905
Central Cable Office, New York.....	June 1, 1903
Central Telegraph Office, London.....	Oct. 16, 1904; May 1, 1905
C. K. Jones' Automatic Telegraph Circuit Protector and Signaling Machine.....	June 16, 1903
Collins Overland Telegraph.....	May 16, 1903
Composite Circuits—Report Com. Assn. Ry. Tel. Supts., Sept. 1, 1904	
Composite Teleg. and Telep. on Canadian Pacific Ry.....	Mch. 1, 1904
Composite Telephone Lines.....	Mch. 1, 1905
Crehore-Squire Automatic Telegraph System.....	May 16, 1902
Definitions of Electrical Terms, Mch. 16, Apl. 1-16, June 1, July 1-16, 1904	
Delany's, P. B., Automatic Telegraph System.....	Mch. 16, 1903
Delany's, P. B., New System of Rapid Telegraphy.....	Apl. 16, 1904
Direct Polar Relay Repeater of the Postal Telegraph-Cable Company.....	Oct. 16, 1903
Earth Currents.....	May 1, 1903
Engraving of Clarence H. Mackay.....	Nov. 16, 1902
Engraving of Col. Robert C. Clowry.....	Apl. 16, 1902
Engraving of the Late John W. Mackay.....	Aug. 1, 1902
Field's, S. D., Amplifier.....	Nov. 1-16, 1904
Field's, S. D., Quadruplex.....	May 1-16, 1904
Flow of Electricity in the Earth.....	Dec. 16, 1903
Ghegan Automatic Repeater.....	June 1, Dec. 1, 1903
Ghegan's, J. J., Multiplex System.....	Aug. 1, 1904
Gray Submarine Signaling Apparatus.....	Jan. 1, 1904
Hand vs. Machine Telegraphy.....	Sept. 16, 1902
Hard Drawn Copper Wire, F. W. Jones.....	Nov. 1, 1903
Harmonic Telegraph, Prof. F. Lori.....	Mch. 16, 1905
Improvements of Roberson Quadruplex.....	Feb. 1, 1903
K. R. Law as Applied to Quadruplex Circuits.....	Jan. 1, 1904
Lefsey Telegraph Key.....	Jan. 1, 1904
Life of Storage Batteries.....	July 1, 1903
Low Resistance Relays.....	Oct. 1-16, Nov. 1, Dec. 16, 1902; Jan. 1, 1903
Midway Islands Cable Station.....	July 1, 1904
New York Fire Alarm Telegraphs.....	Aug. 16, 1903
Passing of the Quadruplex.....	Aug. 1, 1903
Phillips' System of High Speed Telegraphy, J. W. Larish, Nov. 1, 1904	
Pollak-Virag System.....	Mch. 1, 1903
Possibilities of Telephoning Over Tracks to a Moving Train, Mch. 1, 1904	
Postal Telegraph-Cable Company, History of (with portraits of officials).....	Feb. 1, 1904
Postal Telegraph-Cable Company Rules Governing Construction and Repair of Telegraph Lines.....	Apl. 1-16, May 1-16, 1904
Printing Telegraph Systems, Modern High Speed, J. C. Barclay, Nov. 1, 1904	
Printing Telegraph Systems, Story of.....	Jan. 1, 1903
Progress of Telegraphy During Last Thirty Years, W. Mayer, Jr., Mch. 16, 1904	
Progress in Fire Alarm Telegraphy.....	Jan. 1, 1903
Proper Adjustment of Telegraph Apparatus.....	Aug. 16, Sept. 1, 1904
Protection of Telegraph or Telephone Lines When in Hazardous Proximity to High Speed Lines.....	June 1, 1904
Random Recollections of 145 Broadway, W. P. Phillips.....	Feb. 1, 1905
Rapid Telegraphy, P. B. Delany.....	Nov. 16, Dec. 1, 1904
Recent Improvements in Telegraphy, J. C. Barclay.....	Feb. 1, 1905
Reminiscences of New York Telegraphers a Quarter of a Century Ago, Jan. 1-16, Feb. 16, Mch. 1, 1905	
Repeaters:	
Atkinson.....	Feb. 16, 1902
Half-Milliken.....	Feb. 16, 1902
Horton.....	Mch. 1, 1902
Defective Loop.....	Mch. 1, 1902
Double Loop.....	Mch. 16, 1902
Lewis-McIntosh.....	Sept. 16, 1903
Milliken.....	Jan. 16, 1902
Neilson.....	Feb. 1, 1902
Welny-Phillips.....	Feb. 1, 1902
Wood Double Loop.....	Mch. 16, 1903
Bowland Multiplex Printing Telegraph System.....	Sept. 16, 1903
Scott-Phelps-Barclay-Page Self-Winding Ticker.....	Oct. 1, 1903

Simultaneous Telegraphy and Telephony.....	Aug. 16, 1903
Skirrow Switchboard.....	Nov. 1, 1903
Specifications in Construction of 25-foot Pole Line, American Telephone and Telegraph Company.....	Feb. 16, Mch. 1-16, 1904
Stevens' Wheatstone Transmitter.....	July 16, 1902
Stick Telephone, J. C. Barclay.....	June 16, 1904
Stock Tickers, C. L. Healy.....	Mch. 1-16, 1905
Storage Batteries.....	May 1-16, June 1-16, July 1, 1902
Submarine Sound Telegraphy.....	Mch. 1, 1904
Sullivan Outgoing Signal Recorder.....	Mch. 1, 1905
Switchboard Practice at Intermediate Stations.....	Dec. 16, 1904
Ago, Jos. Hollos.....	Feb. 16, 1905
Telaography.....	Aug. 1, Dec. 1, 1904
Telegraph Alphabets.....	Jan. 1, 1904
Telegraph and Weather Service.....	Nov. 1, 1902
Telegraphic Bookkeeping, Jan. 16, Feb. 1, Mch. 16, Apl. 1-16, May 16, July 16, Aug. 1, Sept. 16, Oct. 1, 1903	
Telegraph Operator in Railroad Service, J. B. Taltavall.....	July 1, 1904
Telegraphs in New England, W. P. Phillips.....	Apl. 16, May 1-16, 1904
Telephonage, The.....	June 16, 1902; Mch. 1, 1903
Telephone and Telegraph Bureau, U. S., Washington, D. C., May 1, 1903	
Telephone in Railway Service.....	July 16, 1902; Jan. 1, 1903
Telephony and Telegraphy at Internat'l Electrical Cong.....	Oct. 16, 1904
Testing Device, Useful and Simple.....	Jan. 1, 1904
Transmitting Typewriter Wire Connections.....	Feb. 16, 1904
Twentieth Anniversary Number.....	Jan. 1, 1903
Twenty Years of Standard Time, W. F. Allen.....	Feb. 1, 1904
Typewriting Telegraphs, L. S. Wells.....	Aug. 1, 1904
Typo-Telegraph (Dr. Cardwell), F. J. Swift.....	June 1, 1905
United States and British Telephones and Post Offices, F. W. Jones.....	Apl. 1, 1904
Use of Modern Telephone as Applied to Railroads.....	Jan. 16, 1905
Vibratory Telegraph.....	Aug. 16, 1903
Washington as a News Centre.....	Nov. 16, 1904
Western Union Telegraph Company, History of (with portraits of officials).....	Jan. 16, 1904
What Constitutes a First-Class Operator.....	Oct. 1, 1904
What Constitutes a First-Class Chief Operator.....	Nov. 1, 1904
What Constitutes a First-Class Manager.....	Nov. 16, 1904
What Constitutes a First-Class Superintendent.....	Dec. 1, 1904
What Constitutes a First-Class R. R. Operator.....	Dec. 16, 1904
Wheatstone Automatic Duplex.....	Apl. 1, 1902
When is a Storage Battery Fully Charged.....	Aug. 16, 1904
Wind Pressure on Telegraph Structures, F. W. Jones.....	Dec. 16, 1903
Wire Tables—How to Remember Them, C. F. Scott.....	Apl. 16, 1905
Wireless Telegraphy at Sea.....	Mch. 1, 1904
Yetman Transmitter (Description and Engraving).....	Aug. 1, 1903

Books on the Submarine Cable.

The following list presents an excellent choice of books, with prices, treating on the submarine cable, about every phase of which is discussed. The works named are standard and are of a character that should insure ownership of the lot by every cable man who seeks to acquire a fuller knowledge of the subject of his profession. They are a library in themselves. They will be sent singly or collectively, as may be required, carrying charges prepaid, on receipt of price. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York:

Baines, G. M.—Beginners' Manual of Submarine Cable Testing and Working.....	\$3.50
Bright, Charles—Treatise on Submarine Cables.....	\$25.00
Hoskiaer, Capt. V.—Guide for the Electric Testing of Telegraph Cables.....	\$1.50
Fisher and Darby's—Students' Guide to Submarine Cable Testing.....	\$4.00
Kempe, H. R.—Handbook of Electrical Testing.....	\$6.00
Mullaly, John—The Laying of the Cable; or, The Ocean Telegraph.....	\$4.00
Parkinson, J. C.—The Ocean Telegraph to India.....	\$4.00
Smith, Willoughby—The Rise and Extension of Submarine Cables.....	\$9.00
Wilkinson, H. D.—Submarine Cable Laying and Repairing.....	\$5.00

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The necessary ordinance was passed, and now the telegraph companies are considering how it was that their pole lines along the Midway suddenly became a menace to abutting property.

Adverse Telegraphic Legislation.

The Texas Democratic state convention at its recent session adopted a platform which contains a plank requiring that the next legislature enact a law compelling all telegraph and telephone companies to make wire and business connection with each other at all common points in the state. United States Senator J. W. Bailey, a member of the platform committee, was among those who opposed the plank, on the ground that there was no general demand on the part of the people for such legislation and that it would work an unnecessary hardship and heavy expense upon the telegraph and telephone companies. Col. Thomas Campbell in accepting the nomination of governor said he would see that every platform demand was enacted into law. J. E. Farnsworth, of Dallas, vice-president and general manager of the Southwestern Telegraph and Telephone Company, says such a law would compel telephone companies to make connection at common points and cause a serious impairment of the service of the good companies.

A law of this kind would also revolutionize the telegraph business in Texas, as the Western Union and Postal companies would thereby practically become one system.

Reunion of the Old Time and Military Telegraphers.

As the time approaches for the reunion of the Old Time 'Telegraphers' and Historical Association, to be held at Washington, D. C., on Tuesday, Wednesday and Thursday, October 9, 10 and 11, interest in the coming function appears to be in the ascendant. It may be said, however, that this annual social event, of which this will be the twenty-sixth reunion, so different from the ordinary convention, yet serving to draw together so large a number of representative telegraphers, accompanied by their wives, possesses an attraction that seems but to thrive and grow stronger with each recurring year.

As previously announced, the Arlington Hotel will be the headquarters of the meeting, where special rates have been secured. In order to take advantage of this concession intending visitors who desire hotel accommodations should lose no time in communicating with R. G. Callum, chairman of the hotel committee, whose address is in care of the Western Union Telegraph Company, Washington, D. C.

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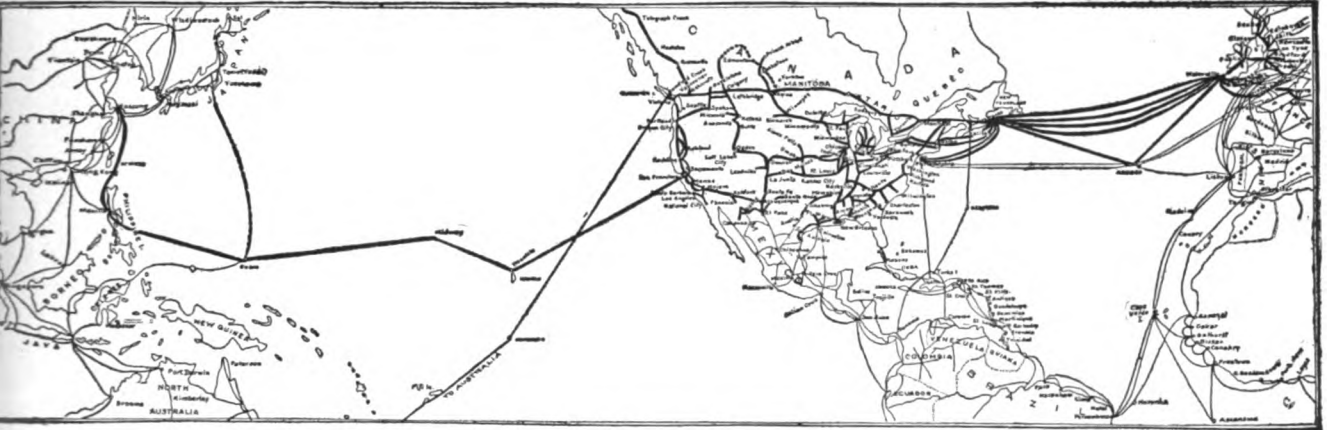
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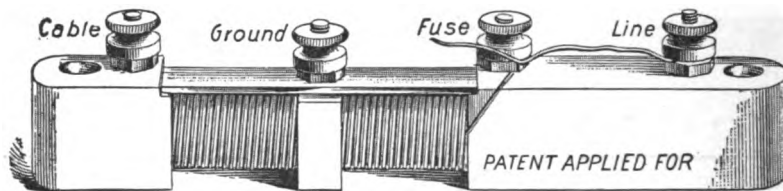
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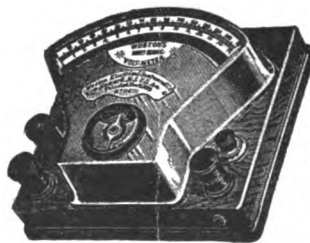
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NEW YORK, SEPTEMBER 16, 1906.

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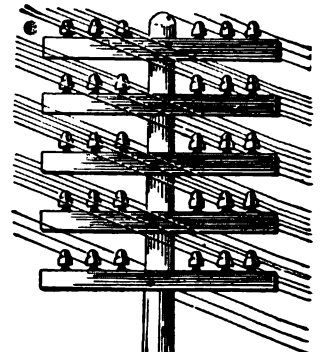
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TELEGRAPH AGE

No. 18.

NEW YORK, SEPTEMBER 16, 1906.

VOL. XXIV.

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SOME POINTS ON ELECTRICITY.

Questions and Answers.

BY WILLIS H. JONES.

A subscriber at Eagle Grove, Iowa, in the train despatcher's office of the Chicago and Northwestern Railroad, asks the following question:

Can you explain through the columns of your paper, for which I am a subscriber, if the standard arrangement of placing the neutral relay on our quadruplexes, first in proximity to the outgoing current, is the most conducive to best static conditions? That instrument being the weaker of the two, why not place the polar relay first in proximity to this current and thus perhaps lessen the static influence ere it reached the neutral instrument. Has this arrangement ever been given a practical test?

In reply we will say that in our opinion the relative positions of the two relays cannot materially or even practically alter the "static" effect one way or the other, and also that there is no reason why the standard arrangement of those instruments may not be reversed without interfering with the operation of a quadruplex circuit in the least. Inquiry fails to find any one who has seen a quadruplex with the standard relative positions reversed, or who would deny that such an arrangement would alter the output.

However, our correspondent has unwittingly suggested the very positions of the two relays that they actually occupy under the present arrangement. He is evidently under the impression that the "static" enters the neutral relay first, and suggests that the

polarized instrument should be placed first in order to act in the capacity of a shield or check and thereby weaken the effect.

His error lies in forgetting that the "static effect" is produced by the incoming, and not the outgoing current; that is to say, the return through the home relays of the line charge when the outgoing current is temporarily cut off by the action of the pole-changer. Hence under the present arrangement the "static" really does enter the polarized relay coils first, as that is the instrument next to the line conductor.

It is hardly probable, however, that either relay acts as a check to any effect produced in its companion. In fact, a check or choke is not even desirable. It is the prolongation of the line discharge that gives the magnets time to partially build up. It would obviously be better if the suggested check could be eliminated entirely, so that the magnet would not have time to act at this unavoidable moment. If any of our readers have tried the experiment, or have any new ideas concerning the problem, we will be glad to hear from them and publish the same.

Another question somewhat similar to the foregoing that was recently received, is as follows:

If each alternate relay in rotation along a single line circuit was connected in such a manner that the direction of its coil winding was opposite to that in the two relays it lies between, would not the static discharge of each on breaking the circuit tend to oppose or neutralize each other in the main line conductor and thereby lessen the total volume?

This would certainly be an ideal and easily arranged method provided it would bring about the result suggested. Unfortunately, it is an impossible proposition from every standpoint. In the first place while the windings of the coils might be alternately reversed the only effect obtained would be a like alteration in the polarity of the respective ends of the polepieces, or cores of each alternate instrument, a matter which could not effect the line static conditions in any manner whatever. Furthermore, although the windings might be geographically reversed, they would still be practically all in the same direction in their capacity as part of the line conductor. Hence, no matter how they are arranged an outgoing current passing through them would develop a counter electromotive force in each, which means that when released by the breaking of the circuit their effect would likewise all be in the same direction; that is to say, in the direction opposite to that of the electric current which created them. ,

Here is a question which has been asked a number of times:

Will a duplex or quadruplex circuit work as well

when the battery at one end of the wire is much greater than that at the other as it will when each terminal set furnishes an equal volume of current?

Theoretically, a surplus of battery power at one end of the circuit should make no appreciable difference in the operation of the circuit provided the smaller current is of normal value. Furthermore, as long as a good "balance" is maintained there will be no practical harm in such temporary arrangement. The home current, be it great or small, is not supposed to have any magnetic effect on the home apparatus, except when its equal distribution between the main and artificial line coils is disturbed by the addition or subtraction of current from the distant battery. So long as this incoming current is sufficient to actuate the apparatus, the volume is not material provided it is constant. The principal objection to such an arrangement, however, aside from the fact that there is an unnecessary waste of battery power at one end, is that the greater volume of outgoing current furnished the more readily will the home apparatus feel alterations in the ohmic resistance of the external line conductor. In other words, the "balance" will not hold as long as it would were the home current not excessive. This is because a change in the line resistance produces a greater ratio of alteration in the current volume of the stronger battery than it does in the weaker and thereby creates a more formidable difference in its division between the main and the artificial line coils.

(To be continued.)

[Important articles by Mr. Jones, appearing in back numbers are as follows, and may be had at the regular price of ten cents a copy, except those appearing prior to a year from the current date, for which a charge of twenty-five cents apiece will be made: A Useful and simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, Inc., June 1 to July 16, Inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, Inc.; Switchboard Notice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, Inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power from the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16; The Dynamo—Series, Shunt and Compound Wound, Feb. 1-16, March 1; The Storage Battery, March 16-April 1-16-May 1-16; A New Double Loop Repeater—Comparative Efficiencies of a Polar and a Neutral Relay, June 1; Influence of Weather on Static—An Electrical Phenomenon, June 16; Induction, Leakage, Crossfire, July 1; The Loopswitch and Loopswitch Testing, July 16, Aug. 1-16, Sept. 1.]

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of TELEGRAPH AGE, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

Those who contemplate subscribing for TELEGRAPH AGE, and who would first like to inspect a sample copy, should not fail to write for the same.

Business Notice.

The Delany Telegraphic Transmitter Company, 20 Broad street, New York, manufacturers of the Auto-Dot transmitter, has issued two unique little pamphlets, one entitled "Dots and Dashes," and devoted to "timely advice;" the other, "Seventy-Seven Saved," which tells how the use of the Auto-Dot machine relieves the operator of multitudinous and wholly unnecessary arm vibrations in his sending. These two brochures contain a lot of interesting information relative to the Auto-Dot, which is also shown in illustration; the strong, practical points of the instrument are clearly described and in a way that the operator will readily understand and appreciate. for the compilation in both instances has been done by a telegrapher who knows and comprehends his subject with a practically intelligent mind—George W. Conkling, general manager of the issuing company. These books were prepared for general circulation among members of the craft, and a written request for them will cause copies to be sent promptly to any address in any part of the country.

Recent Telegraph Patents.

A patent, No. 829,263, for an apparatus for the telegraphic transmission of written characters, has been secured by Adolf Franke of Gross Lichterfelde, Germany. Synchronously revolving wheels at the transmitting and at the receiving station have written characters which successively appear through an apertured screen. The characters are selected by being illuminated from a properly timed spark in a definite phase relation to the rotating wheel.

A patent, No. 828,775, for a telegraph transmitter, has been obtained by Harlie O. Putt, of Millbury, Ohio. A type-writing machine has a bank of keys provided with key levers and a telegraph transmitter has a number of key stems each located directly under one of the key levers. A transmitting device is carried by each key stem and there are means for rotating each key stem when moved longitudinally in one direction, and means for regulating the movement of the key stem.

Patent No. 828,890, for a system of telegraphy, has been granted to Charles A. Johnson, of Meadville, Pa., assignor of one-half to Postal Telegraph-Cable Company, New York. Mr. Johnson is the manager of the large repeater station of the Postal Telegraph-Cable Company in Meadville, Pa. His many years experience in attending the large number of sets of quadruplex, duplex and single repeaters, which connect the New York and Chicago trunk wires, places him at the head in such technical matters.

Claim.—1. The combination in a circuit-breaker of a movable contact connected with a main circuit, two fixed contacts connected respectively with sources of electricity of opposite polarity.

and three normally open sections of conductor in inductive relation, connected to said contacts, respectively.

2. The combination in a switch or circuit-changer of separable contact-points with means for neutralizing or preventing sparking which consists of sections of insulated conductor arranged in inductive relation, such sections connected respectively to said contacts.

3. The combination of two, fixed, circuit-terminals, a vibratory circuit-terminal alternately engaging said fixed terminals and three sections of conductor insulated and arranged in inductive relation with respect to each other, said sections being connected to said terminals, respectively.

4. The combination with a three-point circuit-changer of means for neutralizing or preventing sparking which consists of three sections of insulated conductor arranged in inductive relation, open at one terminal and connected to said contacts, respectively, at the other terminal.

5. The combination with two separable contact-points forming the terminals of a divided circuit, of two sections of insulated wire connected to said contacts, respectively, said insulated sections being arranged in coils in inductive relation to each other.

6. The combination with two separable contact-points of a divided circuit, of two sections of insulated wire connected to said contacts, respectively, said sections being arranged in inductive relation with respect to each other.

No. 826,485, for an electrical typewriter selecting and operating means, held by G. W. Donning, of East Orange, N. J.

The following patent has expired.

Patent expired: Patent No. 410,305, for a telegraphone, held by M. Wheless, of Nashville, Tenn.

Personal Mention.

Mr. S. J. Small, president of the Commercial Telegraphers' Union of America, Chicago, Ill., was a New York visitor this week.

Mr. Harman D. Jones, for twenty-five years employed in the district superintendent's office, Western Union Telegraph Company, Cleveland, O., in various capacities, and for the past four years as chief clerk, has resigned and gone into other business. Mr. Jones was an old timer, having entered the service in 1876 at Erie, Pa., as messenger for the Western Union Telegraph Company, under the late J. P. McKinstry, and, with the exception of a few years spent in the railroad service, has served this single company continuously, and with credit, under Superintendents Wright and Corbett.

Mr. S. L. Burts, until recently manager of the Western Union Telegraph Company at Atlanta, Ga., whose promotion to be general inspector of the southern division of the company,

with headquarters still remaining at the Georgia capital, was noticed briefly in our issue of September 1, is still a young man, being but thirty-seven years of age. His connection with the telegraph dates back eighteen years, during which time he has been employed both in the railroad and commercial service in the various capacities of operator, train despatcher, chief operator and manager of some of the most important offices in the southern division of the company.

Mr. William H. Brodie has been appointed manager of sales of the Edison Manufacturing Company with headquarters at 31 Union Square, New York, succeeding William S. Logue, who died in April last. Mr. Brodie has been connected with the company in its manufacturing department, during the past six years, and is therefore thoroughly familiar with the famous Edison battery, and other products of the concern, a knowledge of much practical value, especially as the conduct of the sales will now come under his direct supervision. Mr. Brodie possesses an engaging personality and will, no doubt, speedily acquire the same wide range of acquaintance in the trade that has always been a marked feature in this department of the Edison company's management.

WESTERN UNION TELEGRAPH COMPANY.

EXECUTIVE OFFICES.

Mr. George J. Gould, who, with members of his family, has been absent in Europe, where he enjoyed a motoring tour of several thousand miles through France, Germany, Switzerland, England and Scotland, returned to New York September 11.

Mr. Gerald Brooks, eldest son of Belvidere Brooks, general superintendent of the Eastern Division, and in whose department he is employed, was married September 5 to Miss Helen Chalmers Nowell, at the home of her aunt, Miss Mary Twombly, New York.

Mr. W. J. Austin, cable accountant of the company, well known in telegraph and cable circles, has left for Dinuba, Cal., for a month's vacation, on a visit to his family. Mr. Austin's daughter and son-in-law have a ranch at this place, where they permanently reside, and where Mr. Austin's wife has been visiting for some months past.

The new office at Brunswick, Ga., which has been fitted up with an entirely modern equipment, has been taken possession of by the company.

The following appointments have been made:

Mr. J. E. Van Berschot, assistant superintendent of supplies and assistant general purchasing agent, with headquarters at Chicago, Ill.; Mr. Ralph E. Bristol, storekeeper of the supply department at New York; Mr. F. A. Gentry, storekeeper of the supply department at Chattanooga, Tenn.

POSTAL TELEGRAPH-CABLE COMPANY. EXECUTIVE OFFICES.

Mr. Clarence H. Mackay reached New York from Europe, on September 11, arriving on the Kaiser Wilhelm II.

Col. A. B. Chandler, chairman of the Board of Directors, who has spent the summer months on his farm at Randolph, Vermont, came to the city for a few days, but the beauties of the New England fall caused him to soon return again to his country home.

Mr. W. H. Matthews, chief clerk of the operating department, has been appointed chief clerk in the general manager's office, to succeed George F. Fagan, deceased.

Mr. E. G. Cochrane, general superintendent of the Eastern Division, and Thomas E. Fleming, assistant secretary and special agent of the company, are again at their desks, after a vacation absence. The latter is now acting as assistant general manager during the absence of Mr. Charles P. Bruch, who is away on his vacation.

Among recent visitors to the executive offices was Mr. E. J. Nally, general superintendent at Chicago.

Mr. Francis W. Jones, electrical engineer, and Mr. Minor M. Davis, assistant electrical engineer and traffic manager of the company, were recent Boston visitors, where they went in the interests of the service.

Mr. John S. Ellis has been appointed assistant superintendent of construction, vice C. A. Lane promoted to the superintendency to fill the vacancy caused by the resignation of Mr. W. H. McCollum. Mr. R. Gould has been appointed general foreman to fill the vacancy caused by the advancement of Mr. Ellis.

The championship prizes won by Postal telegraph operators at the recent Boston tournament are on exhibition in the show windows of the Mark Cross Company, 253 Broadway. These include a large silver cup presented by Clarence H. Mackay, won by D. J. Ellington; two smaller silver cups, presented by Mr. Mackay, won by Joseph P. Gallagher and Edward F. Dougherty; the Carnegie International Trophy for the championship of the world, a large silver cup, presented by Andrew Carnegie, won by D. J. Ellington, and a silver punch bowl, presented by the Boston News Bureau, also won by Mr. Ellington.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. J. A. Edgerton, manager at Raleigh, N. C., has resigned to engage in the mercantile business.

Mr. L. E. Rudd, manager of one of the Boston branch offices, has been appointed manager at Vicksburg, Miss., vice Mr. E. T. Moore, made manager at Lexington, Ky. Mr. Rudd is the son of the late W. A. Rudd, manager at Boston.

Miss Carrie Rock has been appointed manager at Beaver, Pa., vice Miss A. Sheplar, resigned.

Mr. George F. Stadtmiller has been appointed manager at Franklin, Pa., vice A. A. Jeunet, transferred.

Mr. T. H. Kelly, night chief at New Orleans, has been promoted to be chief operator of the office, vice Mr. E. E. Cord, resigned to accept the position as head of the telegraph department of the American Telephone and Telegraph Company. Mr. S. S. Gallagher has been appointed night chief, vice T. H. Kelly, promoted; Mr. Walter Clark, assistant day wire chief, has been advanced to the position of all-night chief, vice S. S. Gallagher, promoted.

Wireless Telegraphy.

Professor A. E. Kennelly, of Harvard University, is at the present time engaged in writing a popular work on "Wireless Telegraphy." It is described clearly and its history is also given. The volume will be profusely illustrated with diagrams and plans.

Mr. Marconi states that the Clifton Wireless Telegraph Station, on which he has been engaged in the south of Ireland, would be completed about Christmas, and would be the most powerful station on the European side of the Atlantic. At an early date an equally powerful station, he states, will be completed at Cape Breton, and from each of these stations it would be possible to send wireless messages across the Atlantic. Mr. Marconi, was recently in Canada, inspecting some important stations, a network of which has now been completed on the banks of the St. Lawrence River.

A gigantic station for wireless telegraphy has been erected by the German Government at Norddeich, near Emden, on the North Sea coast. The station, which stands forth as an imposing landmark owing to its being higher than any other elevated structure which is visible in that district, attracts the special attention of visitors boarding steamers at Norddeich. At present the station has not been brought into official use, pending the completion of the experiments which are in progress. It is claimed to have a radius of action up to 930 miles, and to include almost the whole of Europe, Greenwich, Naples, and St. Petersburg being mentioned as within its scope of activity.

Recent New York Visitors.

Mr. Harman D. Jones, a well-known telegrapher, of Cleveland, O., accompanied by his wife.

Mr. George L. Lang, former superintendent of telegraph of the Cincinnati, New Orleans and Texas Pacific Railroad, Chattanooga, Tenn.

Start your telegraph career right by subscribing for **TELEGRAPH AGE**.

The British Pacific Cable.

The annual parliamentary return has just been issued, giving the accounts relating to the working of the Pacific cable during the year ended March 31, 1906. In presenting this return, Sir Spencer Walpole, K. C. B., chairman of the Pacific Cable Board, makes the following observations:

1. Throughout the year 1905-06 the cable was maintained and continued in efficient working order. I am glad to be able to report that no interruption of any kind occurred on any of its sections. The board's ship, buildings, electrical apparatus and plant at all stations are also in good order.

2. The gross message revenue received during the year amounted to £94,456 9s. 6d., against £84,301 9s. 1d. in the previous year. From the gross revenue, however, £2,642 0s. 7d. has to be deducted, on account of payments made to the Atlantic and Canadian Pacific Telegraph companies for transmitting between Vancouver and Europe, or vice versa, the date and time of filing of all messages between Australia and the United Kingdom, the Continent, etc., and for delivering messages in duplicate in London and some other large centers in the United Kingdom, these payments being necessary to give to the customers of the Pacific Cable the same facilities that are afforded by the Eastern Company's route. With this deduction the net message revenue amounted to £91,814 8s. 11d., against £82,188 1s. 5d., and including a small sum received as interest on balances, the entire revenue being £91,952 13s. 3d., against £87,446 10s. 8d. in the preceding year.

3. The message revenue during 1905-06 was increased from the decision of the Government of the Commonwealth of Australia to pay over to the Board the whole of the receipts in Australia up to December 31, 1905. In previous years the Government had only transferred the receipts, before the close of the financial year, up to November 30. The message revenue therefore, for 1905-6 contains the receipts in Australia for thirteen months.

4. The actual expenditure of the Board on the service of the cable during the twelve months ending March 31, 1906 (including the sum of £34,000 set aside for the renewal account), amounted to £86,963 17s., against £85,751 11s. 2d. in the previous year, and subtracting this sum from the amount of revenue, there remains a surplus of £4,988 16s. 3d. The Board, however, had to provide a sum of £77,544 18s. for interest and sinking fund. This sinking fund will extinguish in fifty years from its institution the entire capital expenditure. Adding this payment to the expenditure, the deficiency on the year's operations amounts to £72,566 1s. 9d., against £75,849 18s. 6d. in the previous year. This deficiency has to be made good by the contributing Governments.

The financial results of the year 1905-6 are set forth in the following statement:

RECEIPTS.				
Traffic receipts..	£94,456	9	6	
Less "Date and Time," etc., payments	2,642	0	7	
				£91,814 8 11
Interest on deposits				138 4 4
Deficiency recoverable in the following proportions:				
England	£20,154	9	4	
Canada	20,154	9	5	
Australia	24,185	7	3	
New Zealand..	8,061	15	9	
				72,556 1 9
				£164,508 15 0

EXPENDITURE.				
Third annuity payment	£77,544	18	0	
Head office (salaries and expenses)	4,916	11	4	
Head office (advertising, canvassing, engineers' fees, royalties and cost of remitting money home)	1,400	2	3	
Stations (salaries and expenses)	29,697	18	3	
Ship (salaries and expenses)....	15,338	17	3	
Provident fund	1,359	5	5	
Renewal account	34,000	0	0	
Expenses in connection with the opening of new offices in Australia	251	2	6	
				£164,508 15 0

5. The renewal fund, including interest, amounted on March 31 last to £125,158 3s. 1d.; £12,500 of this sum was held in spare cable. The amount of £109,907 10s. 7d. was invested in Home and Colonial securities, while a balance of £2,750 12s. 6d. was in hand, and has since been invested. All interest earned on the investments is added annually to the fund, and is not treated as part of the revenue of the year.

6. The Board's forecast of its probable revenue and expenditure during the year of 1906-7, as submitted December 30 last, is as follows:

Traffic revenue.	£88,600	Annuity	£77,545
Estimated deficit	87,006	Renewal fund..	33,000
		Working exp*..	65,061
	£175,606		£175,606

*Including £8,000 for expenses in connection with opening offices and competitive tactics in Australia.

7. The land-line services in Canada, Australia and New Zealand in connection with the cable have been generally well maintained by the Governments concerned and by the Canadian Pacific Railway. The Atlantic companies have afforded uninterrupted cable communication throughout the year and a rapid and efficient service.

8. The Board is glad to be able to acknowledge the consistently good and loyal services rendered by their staff throughout the year. The health of the staff has been generally satisfactory and the Board is glad to report no serious illness has occurred.

9. Under Capt. Sharp the efficiency of the Board's repairing vessel and the discipline of the ship's company have been well maintained. In deference to the wishes of the Australian and New Zealand Governments, the Chinese stokers have been replaced by natives of Norfolk Island, who have, so far, given satisfaction.

10. In accordance with the recommendations contained in the report of the conference of the various Governments concerned, which was issued in July, 1905, and in consequence of the negotiations with the Eastern Extension Company having fallen through, the Board despatched their general manager, Mr. Reynolds, to Australia to initiate active competition in that colony. The company having refused to accept the Commonwealth agreement as defined by the Conference, the Commonwealth Government at once withdrew the privileges provisionally extended to the company in Melbourne, and accorded to the Board facilities in Sydney similar to those enjoyed by the company under the New South Wales agreement. Advices from Mr. Reynolds indicate the early opening of the Board's offices in the latter city.

The capital expenditure on the Pacific Cable undertaking up to March 31, 1906, was £1,997,707 18s. 6d., of which £3,774, 4s. 2d. has been expended during the financial year.

The Cable.

Cables interrupted September 14:
Venezuela Jan. 12, 1906
Messages may be mailed from
Curacao or Trinidad.
Pinheiro "via Cayenne" Aug. 13, 1902
Santa Cruz de la Palma (Canaries) July 12, 1906

Mr. George G. Ward, Mrs. Ward and Mrs. Hough, their daughter, together with Mr. R. Maynard Dodd, electrician of the cable steamer Restorer, detailed to observe the laying of the Guam-Japan cable and to make the final tests, sailed from Yokohama, Japan, on the steamer Mongolia, on September 10, en route for home.

The Commercial Pacific Cable Company's repairing steamship Restorer, stationed at Honolulu, has been engaged in saving the Pacific Mail steamship Manchuria from destruction. The Manchuria went ashore on the eastern side of Oahu Island while trying to make the port of Honolulu in a rainstorm on the morning of August 20.

The Commercial Cable Company, of Cuba, capital \$100,000, was incorporated at Albany, N. Y., September 12, to connect New York with Havana by cable and land telegraph, the cable to run from Florida to Key West and thence to Havana. The term of the company's existence is 1,000 years. The directors are Clarence H. Mackay, William W. Cook, Samuel S. Dickenson, George Clapperton and Albert Beck, of New York; Dumont Clarke, of Dumont, N. J., and Albert B. Chandler, of Brooklyn.

Captain H. A. Moriarty, R.N., C.B., who died in England, August 18, at the age of ninety-one years, took a prominent part in the early attempts to lay the Atlantic cable in 1857-58, and also in 1865-66, his services in this connection being rewarded with the C.B. order. During the voyage of the Great Eastern in 1866 with the new cable, Captain Moriarty, as navigator, indicated the spot at which the end of the old broken cable should be found, having taken careful bearings of the position on the previous occasion, and his statement was verified exactly, the cable being hooked directly he announced that the ship was in the correct place. The cable was brought to the surface, but parted, yet was finally secured a fortnight later.

A Veteran St. Louis Operator.

Mr. Edward L. Parmelee, a prominent St. Louis telegraph operator, has passed forty-five years in the service of the Western Union Telegraph Company. He now holds a more responsible position than at any time hitherto in his career, proving that a man's value does not decrease with age. When he began to work for the Western Union in Indianapolis, in 1861, there were only five operators in the office; now the company employs there over one hundred. Mr. Parmelee worked in the Indianapolis office during the Civil War. He also had the honor of working at the side of Thomas A. Edison and the late Charles C. Whitney, who afterwards became secretary of the New York Life Insurance Company. In 1865, Mr. Parmelee was transferred to St. Louis. When he went there, there were only seven operators employed by the Western Union, which, at present, employs over 300.

When Mr. Parmelee went to work in St. Louis, Col. R. C. Clowry, who is now president of the company, was superintendent. He relieved him many times during busy days, when operators worked for days and nights at a stretch without leaving the office. Mr. Parmelee was born in Lockport, N. Y., 61 years ago.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

Reunion of the Old Time and Military Telegraphers.

Preparations have been about completed covering the programme for the entertainment of the Old Time Telegraphers' and Historical Association and of the United States Military Telegraph Corps, their twenty-sixth joint annual reunion, which meets in Washington, D. C., on Tuesday, Wednesday and Thursday, October 9, 10 and 11. This programme, which will be found to be very attractive in the diversity of the recreation planned, and which has been already outlined in these pages, will, together with much other correlative matter, be published in full in the next issue, October 1, of TELEGRAPH AGE. The whole will present a sketch, historical and otherwise, of the associations named, which will be embellished by numerous engravings, that will be of interest not only to members alone, but to the great body of telegraphers as well, for it will be a narrative that the fraternity at large will appreciate and enjoy.

It will be remembered that the Arlington Hotel, Lafayette Square, a location not far from the White House, has been selected for the reunion headquarters. We are again requested to state that those who desire to obtain hotel accommodations in advance should address promptly Mr. R. G. Callum, who is chairman of the hotel committee, care Western Union Telegraph Company, Washington, distinctly specifying the kind of room or rooms required, and their probable length of stay.

Mr. William H. Young, of the Western Union Telegraph Company, Washington, D. C., is president of the Old Time Telegraphers' and Historical Association, and Col. William B. Wilson, of Holmsburg, Philadelphia, is president of the Society of the United States Military Telegraph Corps.

The programme of entertainment covering the three days of the reunion, as furnished by President Young, is as follows:

Business meeting of the Old Time Telegraphers' and Historical Association at ten o'clock, at the Arlington Hotel, on the morning of Tuesday, October 9. This will be followed by a business meeting, at the same place, at eleven o'clock, of the Society of the United States Military Telegraph Corps. At three o'clock in the afternoon, a visit to Arlington, Va., and Fort Myer will be made. There will be a cavalry drill at the fort. In the evening a theater party is proposed.

On Wednesday morning, October 10, eleven o'clock is the hour named for assembling at the White House. At twelve o'clock President Roosevelt will receive the telegraphers. At one o'clock a trip to Mount Vernon will be made. In the evening a visit is planned to the Congressional Library.

On Thursday, October 11, the purpose is to begin the day at ten o'clock by a sight-seeing trip about the city in automobiles, while the afternoon will be devoted to inspecting the Corcoran Art Gallery, the Washington Monument, the National Museum, and possibly the Capitol. In the even-

ing the concluding feature of the reunion will occur, namely, that of the banquet at the Arlington Hotel. This will be a subscription dinner and a charge of \$2 will be made for each person attending the affair.

Mr. John Brant, secretary of the Old Time Telegraphers' and Historical Association, is negotiating with the railroad authorities in an effort to secure for members desiring to attend the Washington reunion, a rate of fare of one and one-third, on the certificate plan. Under such an arrangement those attending the convention will be obliged to pay full fare going, at the same time receiving a certificate that will entitle the holder to return at a one-third rate.

Copper Famine Imminent.

The situation in the copper market in which the telegraph companies are so largely interested, is becoming acute. All of the usual sources of supply are unable to furnish the metal for the reason that the producing companies are sold out completely, and contracts now being made run well into January of next year, and beyond. Sales within the month past have been enormous breaking all previous records. Consumption is well above production, with a constantly increasing demand, the telegraph and telephone companies, the electrification of railway systems, besides that used in building operations and in the construction of electrical machinery and appliances, all being heavy users. Another cause of deficiency is due to the fact that skilled labor is scarce, because of the wider demand for services, and it is doubtful if the output of copper in the immediate future will show any increase over that of the past. Meanwhile a heavy foreign demand continues, while the imports of the metal are curtailed, especially in the Chilean output interfered with by the recent earthquake in that country. The price of copper will probably advance to 20 cents a pound before the first of the year.

He was a "Sound" Reader.

A certain bucketshop at Atlantic City, N. J., had a caller a few days ago who was described as a "gray haired old chap," and who put up \$600 on an order for the purchase of a stock named by him. A member of the firm went to a telegraph instrument and pretended that he was sending in the order for the customer, who later asked him if he had bought the stock.

"Why, yes; I just now sent your order by telegraph to Philadelphia," was the reply.

"Well, I like your nerve, but you are a d—— liar. I've been a telegraph operator twenty years and I know that you have done nothing of the sort," replied the man with the gray hair. Then the old man gave the broker just ten minutes to return his money, and it was speedily forthcoming. The bucketshop the next day went out of business.

A Test of Transmitting Machines.

An exceedingly interesting test of telegraphic sending devices occurred on the afternoon of September 4, in the offices of Francis W. Jones, the electrical engineer of the Postal Telegraph-Cable Company, New York. It was conducted under the supervision of Minor M. Davis, assistant electrical engineer and traffic manager of the company; Jesse Hargrave, assistant electrical engineer, and F. E. d'Humy, electrician of the Eastern Division. The object of the trial was to demonstrate how the signals of mechanical and electro-mechanical Morse signal transmitters compared with the signals transmitted by hand on the Morse key, and to ascertain whether the several transmitting instruments were capable of sending perfect Morse signals when handled by competent telegraphers. This object was prompted by the fact that for a year or more past complaints had reached the officials of the Postal Telegraph-Cable Company that the mechanical transmitting devices were being used by some operators incompetent to properly manipulate them, to the detriment of the service, inasmuch as many errors had been traced directly to this cause.

The machines on trial were the Mecograph, the Auto-Dot, mechanical and electrical; the Vibroplex, the Autoplex and the Yetman transmitter, instruments now coming into such extensive use, while the circuit over which the test was made was local in character. The result of the test, which was entirely a preliminary one, shows that when the mechanical and electro-mechanical transmitters are accurately adjusted and manipulated by skilled operators that such transmitters produce electric impulses or signals comparing favorably with those produced by a first-class operator on a Morse key.

The test served to indicate that an electro-mechanical transmitter, when well made, properly adjusted and its battery kept in good order, produced the most reliable signals and manifested less tendency to split dots.

There is no doubt that the change from the Morse key to a reliable mechanical transmitter is a desirable thing for certain operators, as it enables them, when working "bonus," to do more work in a given time, and at the same time requires less motions of the hand.

Many of the transmitters in use upon telegraph lines are of earlier makes and lacking in the improvements observed in the more up-to-date machines, and to the use of these old instruments is traceable many of the faults complained of.

Among those who took part in the test besides the officials of the company were: C. P. West, of the Postal Telegraph-Cable Company, New York, who used the Mecograph No. 4, which device was also represented by Mr. D. A. Mahoney, the New York agent; Mr. George W. Conkling, general manager of the company manufacturing the Auto-Dot machine, electrical and mechanical, manipulated that instrument as well as furnishing specimens of

hand Morse sending; Horace G. Martin, inventor of both the Vibroplex and the Autoplex, used both these machines in conjunction with C. R. Schoonmaker and P. A. Gersbach; Fred W. Lass, of the main office of the Postal company, was selected to do the hand sending for comparison with the machine work; while the interests of the Yetman transmitter were confided to the care of J. P. Gallagher. Mr. J. B. Taltavall, editor of TELEGRAPH AGE, was also present during the test.

Mr. Francis W. Jones, electrical engineer of the Postal company, stated that this preliminary test will shortly be followed by another test, at which time it is hoped that all companies interested in the manufacture of transmitting devices, will be duly represented, especially so, now that the manufacturers better understand the object of the Postal company in holding these tests.

The Approaching International Wireless Telegraph Conference.

The International Conference on wireless telegraphy is scheduled to take place in Berlin next month, with representatives from the various national governments. The matters which have heretofore engaged the attention and occupied the conclusions of these conferences are of great concern to international comity, national government and individual enterprise. The tendency of the past conferences has been, we think, to augment unnecessarily the scope of government interference with wireless telegraphy. "Free as the air" should also be construed into "free as the aerial ether." The high seas belong to all and so should the sky above them. It is right that a government should have control of all extra-territorial wireless telegraphy in time of war. War upsets all calculations and makes a right of many wrongs. But it is not right that a national government should hamper enterprise, by needlessly restricting wireless telegraph applications in time of peace. Wireless telegraphy is still in its infancy. A great deal of experimental work has yet to be done to develop its latent capacities. It is not to be expected that army and navy officials will have time, funds, equipment, inclination or training materially or rapidly to advance the work of research and costly experimentation, if wireless telegraphy, as an art, is confiscated by the governments of the world, under the title of telegraph regulation. On the other hand, it must be admitted that national governments not only have the right to regulate wireless telegraphy within the limits of reason, but that they also are under the necessity of doing so, in view of making adequate provision for prompt action in case of war. It should naturally be the object of any or all governments to hamper the progress of the science and art of wireless telegraphy, and their industrial applications, as little as possible in conducting the necessary regulation.—Electrical World.

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NEW YORK, SEPTEMBER 16, 1906.

The Book Department of Telegraph Age, always a prominent and carefully conducted feature of this journal, has in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientage. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

Reform in Punctuation.

If reform in spelling is one of the requisites of the time, it should not be overlooked that the question of punctuation also needs consideration. Every newspaper and publishing house has its own standard, and rules governing such are never alike. Punctuation is something that authors rarely bother themselves about, leaving such detail more frequently to the editor or the judgment of the proofreader. The slovenly punctuated matter that finds its way into newspaper offices, too often emanating from sources where the display of more intelligence would naturally be expected, is simply shocking. The reckless use of the dash, remarks a contemporary, is common and often marks for obscurity.

Spelling Reform.

The initiative decree for a simplified form of spelling, at least so far as may be embraced within a selected list of 300 or more words, promulgated by a self-appointed committee, or board, as it is called, and endorsed by President Roosevelt, has gone forth to the country. Following the natural discussion incident to any proposition of so revolutionary a character, the matter is ceasing in great measure to attract the attention and to secure the approval that its promoters evidently expected, for the appeal seems to fall on a public sentiment but indifferently committed to reform in this particular. A horse may be led to water but compelling him to drink is a wholly different matter. So it is that acceptance of a change of this nature cannot be forced off hand upon a people. Spelling and pronunciation are both matters of custom, founded not upon imaginative conceit, but upon the etymology of the language itself, and consequently are better modified by gradual than by abrupt process. Otherwise, if it be desirable that 300 words be selected for change, why not go through the entire vocabulary, complete the work of reconstruction without further delay and set altogether a new pace for spelling? It might be possible to so correct the mother tongue as to "reform" it out of existence, "roots" and all, and thus make way for the new universal language, "Esperanto," which in view of recent events appears to be exhibiting some traces of vitality.

Of the 300 words named the spelling of a large proportion of the same is not affected by this latter-day mandate. For instance, the dropping of a "g" in "waggon," and the letter "u" from such words as "favour" and "honour," "e" in "abridgement," etc., was long ago adopted, and why obsolete forms of spelling should be placed in the category of change at this time is not exactly clear.

The rules for the modified spelling have been summarized as follows, some features of which fit into accepted modern methods:

1. When offered a choice between æ and e, choose e. Examples: Anæsthetic, esthetic, mediæval.
2. If the choice lies between e and no e in words like abridgment, lodgment, acknowledgment, always omit the e.
3. Use t in place of ed, for the past or past participle of verbs ending in s, sh, or p. Examples: Dipt, dript, prest, distrest, husht, washt.
4. Stick to ense in preference to ence when you have a choice. Examples: Defense, offense, pretense.
5. Don't double the t in coquet, epaulet, etiquette, omelet.
6. When you can replace gh with f, do it. Example: Draft.
7. Better still, get rid of gh altogether. For plough write plow. For through write thru.
8. Write the Greek suffix ise or ize with the z by preference. Examples: Catechize, criticize.
9. Where any authority allows it, omit the e in words spelled with ite. Example: Preterit.
10. Use a single l in words like distil, instil, fulfil.
11. And omit one l from words now written like fullness. Example: Dulness.
12. In words sometimes spelled with one and sometimes with a double m, choose the short form. Example: Gram, program.

13. In words spelled with æ or e, choose e. Example: Esophagus.
14. Always omit the u from words sometimes spelled our. Examples: Labor, rumor.
15. Where you can get any authority, use f in place of ph. Examples: Sulfur, fantasm.
16. In words spelled with a double use a single r; as, bur, pur.
17. Spell theatre, centre, etc., in the English way—center, theater, niter, miter.
18. If a word is spelled with s or z in root, use the z; as, apprise, surprise.
19. From words spelled with sc or s omit the c. Examples: Simitar, sithe.
20. Omit the silent terminal ue when allowed. Examples: Catalog, decalog, demagog, pedagog.

The modest sum of \$125,000, and a "little more," as a press despatch informs us, being demanded for failure to deliver a telegram promptly, and which has been made the base of a suit at law, indicates the mild way the aggrieved Butte, Mont., citizen seeks redress for alleged wrong at the hands of the Western Union Telegraph Company. When it is remembered that the "failure" of the telegram in question to reach its destination on time, disbarment proceedings against an attorney, to whom, it is claimed, the message would at least have granted an extension of time, were permitted to be taken, the deplorable sadness of the case becomes apparent. The attorney, himself, who brings the suit, claims to have been in the receipt of \$5,000 a year income. He sues for the sum total of such an income covering a period of twenty-five years.

The English Postmaster-General's Annual Report.

The number of telegrams, which had been falling off during the past two years, now shows an increase of 509,000, the total number being 89,478,000. The estimated value of railway free telegrams is £59,000, an increase of £4,200, and that of Government free telegrams £18,500. The number of press telegrams shows a decrease of 81,000, which is accounted for by the cessation of the war, and the decrease would have been still greater but for the general election. The method of counting the number of words of press telegrams is to undergo a change, as the estimate hitherto made was not accurate. There are now 10,372 telegraph offices, and 2,395 at railway stations and other public places, an increase of 240. The intercommunication switch in the chief office has been considerably extended, and telegrams can now be signaled directly between 200 Metropolitan offices without retransmission. The use of the Murray page-printing telegraph has been fairly successful, and will be extended. The underground line to Glasgow has been completed, and communication between these towns, as well as Liverpool, Manchester and Leeds and the various towns on the route is thus secured. An underground line to Chatham has also been laid, and the western line has been completed as far as Slough. The latter line is intended to be carried to Cornwall, to secure communication with

the Mediterranean and Atlantic cables. There were 8,796,000 foreign telegrams, an increase of 457,000. Improved apparatus is to be used on the Paris and Antwerp lines. No new Government cables have been laid, but the Commercial Cable Company has laid another cable between Waterville and Canso. The objects of the Wireless Telegraphy Act of 1904 are repeated, and 130 applications have been made for licenses for installations. Five hundred and fifty-eight outward Marconi telegrams and 11,094 inward telegrams have been dealt with to and from ships at sea.

The telephone is being largely used by subscribers to send telegrams for inward transmission, the total number of telegrams being 3,123,700, an increase of 23 per cent. The telegraph and telephone revenue of the year was £4,151,380, an increase of £231,357, and the expenditure was £4,906,087, an increase of £66,628. The net deficit was thus £754,707, or £164,729 less than last year. If allowance be made for interest on the capital, £10,867,644, created for the purchase of the telegraphs, the telegraph deficit on the year is £1,033,190. The net revenue from the postal and telegraph services was £4,514,207. A large number of appendices are given, showing details of the various services.

Copper Wire Thieves.

San Francisco, in its wrecked condition, appears to offer a tempting field for the depredation of wire thieves. Not only the telegraph companies, but the united railroads and the telephone company have been heavy losers from the depredations of a well-organized band of junk thieves, who discriminate in favor of the more valuable junk, such as copper wire and brass findings. One night recently copper wire to the value of \$500 was stolen from the Postal Telegraph-Cable Company's former office in that city. Not alone in this country do wire thieves thrive and ply their vocation, for it is recorded that in England their kindred are found to be equally busy. In fact, both in England and on the Continent we have many times recorded the stealing of telegraph wire, and in the current issue of an English electrical paper we find an item stating that the Great Eastern Railway has suffered by reason of such depredations. In Europe severe penalties are meted out to offenders of this class, while in this country such looters are usually let off either by the payment of a small fine or but an inadequate term of imprisonment.

Consul-General Richard Guenther reports from Frankfort, Germany, that among the European states Russia has the longest telegraph lines, a total of 175,000 kilometers (109,375 miles). Next is France, with 150,000 kilometers (93,750 miles); Germany, with 134,000 kilometers (83,750 miles); Great Britain, with 79,000 kilometers (49,375 miles). More than twice as many telegrams are sent in Great Britain as in Germany, and nearly double the number sent in France.

The Early Progress of the Electric Telegraph.

[In the *Journal of the Society of Arts*, published in London, in the copy bearing date of April 23, 1858, almost fifty years ago, Mr. C. W. Siemens, C. E., who afterwards became the head of the great house of Siemens Brothers, of London and Berlin, contributes a highly interesting article bearing the above title, from which we take the following extracts, and which, in the elucidation of his subject, shows the master mind of the man, and the grasp he had on the telegraph at a time when it was comparatively a new art. The article will be read with much interest.—Editor.]

The growing importance of the electric telegraph, both in a scientific and social point of view, and the circumstance of my connection for a good many years with its practical development, are the apologies I have to make for venturing to occupy the attention of the society this evening.

The object which I have more particularly in view is to trace the gradual course of progress of this invention since the time of its first appearance upon the stage, without pretending, indeed, to establish any new historical facts or to decide upon the relative merits of contending claimants to invention or discovery (although I shall not willingly offend against the right of anyone), but with a view to establish more clearly our present position in the scale of progression, and to point out with some degree of certainty the direction in which we should travel in order to realize still greater results, particularly the accomplishment of transoceanic communication.

When, little more than a century ago, Franklin, the father of electrical science, ascertained that atmospheric electricity, which manifested itself in the imposing form of thunder and lightning, was identical with frictional electricity, he employed an apparatus comprising an insulated metallic conductor, the electric machine, the earth return circuit, and a receiving instrument, consisting of a pair of cork balls, suspended by silk threads, which, upon being electrified, struck against a pair of signal bells. This apparatus comprised, indeed, all the elements required for the construction of a modern electric telegraph. Nor was the idea of an electric telegraph new, even in the days of Franklin, for we are informed that as early as the year 1728, a pensioner of the Charter House, named Stephen Grey, made electrical signals through a suspended wire, 765 feet long. Yet a century of unceasing efforts, by men of all civilized nations, including some of the greatest natural philosophers the world ever produced, was still required to reduce those elements into available forms for practical purposes.

If we pass over the experiments of Winkler, of Leipzig, in 1746, Watson, of London, and Le Monier, of Paris, the year following, as preliminary inquiries into the velocity of the electric current in metallic conductors, we find that the

honor of having produced the first electric telegraph is due to Lesage, of Geneva, who actually constructed, in 1774, an experimental line of communication, consisting of twenty-four suspended line wires, representing the twenty-four letters of the alphabet, respectively. Each wire terminated in a pith ball electrometer, the balls of which separated, upon the wire in question being charged at the other extremity by means of a Leyden jar, denoting the letter intended to be communicated. Lomond, of France, perceiving the difficulty and expense attending so many line wires, contrived, in 1787 (see "Young's Travels in France," 1787), an experimental line of telegraph in his house, consisting of only one line wire connected with a pith ball electrometer at both ends, and he proposed a telegraphic code by repetitions of his only primitive signals. Reisser, Dr. Salvo, of Madrid, and many others proposed various modifications of the same apparatus, but it is hardly necessary to add that all of them remained unrewarded by success.

In consequence of so many fruitless attempts, electric telegraphs were already being classed among the chimerical projects of the time, when at the dawn of the present century a new field for invention was opened by the important discoveries of the Italian philosophers, Galvani and Volta.

The voltaic current, unlike the spontaneous discharge of static electricity, could be conducted with comparative facility through long metallic conductors, and was capable of very powerful effects in decomposing water or other substances, which qualities rendered it clearly preferable for telegraphic purposes.

Struck by these views, Soemmering, of Munich, constructed, in 1808, the first voltaic telegraph, consisting of thirty-five line wires, any two of which could be combined to form the electric circuit and produce a signal at the other extremity by decomposition of water under any two of thirty-five inverted glass cups, arranged side by side in an oblong bath of acidulated water. The thirty-five wires terminated in gold points, under the inverted glass cups (or volta-meters), and the rising of the gases of decomposition betrayed to the attentive observer the passage of the current.

The difficulty of dealing with so many wires suggested to the mind of Schweigger the same expedient which Lomond had recourse to with regard to static electricity, that of producing the number of line wires to a single metallic circuit, and the receiving instrument to a single decomposing cell, having recourse to repetition, and to differences in the duration of succeeding currents, in arranging his telegraphic code.

It seems not improbable that if electrical science had made no further advances, the projects of Soemmering and Schweigger would have gradually expanded into practical working chemical electric telegraphs, such as have been proposed at a much later period by E. Davy, 1838,

Morse, 1838, Bain, 1843, and Bakewell in 1848, which latter is particularly interesting inasmuch as not mere signals or conventional marks are received by it, but a fac-simile of the message, previously written with a solution of shellac upon a metallic surface.

The discovery of Oersted, in 1821, which, under the hands of Schweigger, Ampère, Arago and Sturgeon, soon expanded into electro-magnetism, turned the tide of invention into quite another direction. Ampère was the first to propose an electro-magnetic needle telegraph, consisting of twenty-four needles, representing each a letter of the alphabet, and twenty-five line wires, the extra wire being intended for the metallic return circuit common to all. Ritchie executed, in 1832, a model of Ampère's telegraph, with an essential improvement, to the effect that each needle, by its motion, moved a screen disclosing a letter of the alphabet.

Another version of the same general arrangement was patented by Alexander, of Edinburgh, as late as 1837. Fechner, of Leipzig, and Schilling von Canstadt, of Russia, proposed in 1832, apparently independently of each other, a single-needle telegraph, with deflection of the needle to the right and left; and Fechner was the first to prove, by calculation, the power of the galvanic current to traverse a great length of line wire.

Gauss and Weber, of Goettingen, took up the subject of electric telegraphs at about the same time, but had not proceeded far when their attention was diverted by the great crowning discovery in electrical science. I mean the discovery of induction and of magneto-electric currents by Faraday, in 1831.

Gauss and Weber rightly judged the superiority of magneto-electric over voltaic currents for telegraphic purposes, and in applying them they effectually established the first working electric telegraph in 1833, with the arrangements of which I became practically acquainted some years later, when a student at Goettingen.

It consisted of a line wire and return current wire, the former of which was carried upon high posts over the town of Goettingen, extending from the observatory to the tower of the public library, and thence to the new magnetic observatory of Weber, a distance of a little more than an English mile. The magneto-electric current was produced by means of a coil containing 3,500 turns, which was situated upon a compound bar magnet, weighing seventy-five pounds, the coil being at liberty to slide freely to and fro upon the bar. In sliding the coil rapidly from the center toward the south pole of the magnet and back again, a succession of two opposite currents was produced, which, traversing the line-wire circuit, including coils of the receiving instrument, caused a short jerk of the needle, say to the right and back again, whereas the deflection of the needle would be to the left when the exciting coil was moved toward the north pole

and back. The amount of motion imparted to the coil determined also the amount of deflection of the needle, and could, by means of a telescope and a scale, be read off in degrees on a reflector attached to the end of the needle. The needle itself weighed 100 pounds, and was suspended from the ceiling of the room by untwisted silk. Notwithstanding the extraordinary weight of the needle (which was the same as that used by Gauss to determine the laws of terrestrial magnetism), its motions were beautifully energetic and distinct when viewed through the telescope. Gauss and Weber did not pretend, however, to the construction of a commercially useful electric telegraph, but delegated that task to Steinheil, of Munich, who enjoyed already at that time a reputation as a skillful mechanic. Steinheil applied himself vigorously to the task, and produced, in 1837, his needle-printing and acoustic instruments, which he first tried at Munich through about five miles of suspended line wire, and shortly afterwards upon the Taunus Railway, near Frankfort. In trying whether the rails might not be used for metallic conductors, he rediscovered the conducting power of the earth itself, which, it appears, had been lost sight of since it had first been discovered by Franklin with regard to static electricity, and proved also with regard to voltaic electricity, in 1803, by Erman, Basse and Aldini.

The first recording instrument, and the telegraphic earth circuit, are discoveries which entitle Steinheil to a high position among the originators of the electric telegraph, although the means he proposed for its execution were too refined for the time, and did not lead on that account to immediate practical results.

At the time when Steinheil was absorbed in his labor, Professor Wheatstone was also engaged upon a series of experiments on the velocity of electricity, with a view to the construction of electric telegraphs, and in June, 1837, he joined Mr. Cooke in a patent for a needle telegraph of five line wires (besides one wire for the return current), and as many needles, which, by an ingenious system of permutations, could be so deflected that any letter of the alphabet was pointed out upon a diamond-shaped board by the convergence of two needles toward it. The line wires were proposed to be coated with insulating material, such as fibrous substances saturated with pitch, and to be drawn into leaden pipes, in order to exclude the moisture of the ground into which they were intended to be laid. An experimental line of telegraph on this principle was established in the same year, at the Euston Railway station, and the results obtained left, it appears from documentary evidence, no doubt upon the mind of the then resident engineer of the London and Birmingham Company, the present Sir Charles Fox, of its ultimate success. That success, however, was not obtained without a struggle against practical difficulties, in the course of which the system underwent important modifications, of

which the double needle instrument, such as is still used extensively in this country, and (in 1843) a return to overground line wires, were the results.

To Cooke and Wheatstone is due the credit of having established the first commercially useful lines of electric telegraph, namely, the lines between Paddington and Drayton, commenced in 1838, and between London and Blackwall, commenced in December, 1839, which were soon followed by others.

If viewed from our present position, the needle telegraph cannot be considered an advance, in point of principle, on Gauss and Weber, or Steinheil; it involved, in fact, a return from magneto-electric to voltaic currents—from a single-line wire to several—and from recording of messages, to their mere indication; yet, for the time being, when insulation was imperfect and the important law of Ohm was hardly understood, except by a few natural philosophers, it had the probability of success in its favor, because the duty required from the electric current consisted in deflecting a magnetic needle to a merely appreciable extent, and it was of no great importance to the result whether a more or less considerable proportion of the current was lost through imperfect insulation. The upright weighted needle—the key with dry metallic contacts—and other details, were also of a novel and meritorious character. Why the same system should, however, be still persisted in at the present day, in this country, when improved systems have been adopted in nearly all other countries, including the British possessions, is a question which, I hope, will receive an answer from those who practically uphold it. It is evident, however, that Wheatstone did not intend to stop there, from his numerous other inventions, which followed each other in rapid succession, and amongst which his dial and printing instruments—his early applications of magneto-electro currents—the relay—and the first judicious application of electro-magnets, so as to obtain more powerful effects at distant stations, are the most remarkable.

The country of Franklin has not been behind-hand in gathering the first fruits of electrical science. It is said that Morse contemplated the construction of an electric telegraph since the year 1832, although he did not take an overt step till the year 1837, when he lodged a caveat in the American patent office, which patent was not enrolled till the year 1840. There is no evidence to show that Morse's early ideas had assumed any definite shape until the year 1838, when he deposited an instrument of his construction at the Paris Academy of Sciences. Morse's invention consists chiefly in the substitution of electro magnets for needles in the construction of a recording instrument, which, in other respects, is similar to Steinheil's. The step was, however, an important one to render the instrument powerful and certain in its action, and, com-

bined with Wheatstone's relay, Morse's recording instrument will, it may be safely affirmed, be used universally for all except local telegraphic communication.

In the year 1845, when the practical utility of electric telegraphs had been demonstrated in England, several continental governments determined upon their establishment. The Belgian, Austrian, and, a few years later, the Sardinian government, simply adopted the double needle telegraph. In France, De Foy and Brequet, fils, contrived a double step by step or dial telegraph on Wheatstone's principle, which enabled them to imitate the same code of signals which had been used for the semaphore telegraph.

In Prussia a royal commission was appointed to consider and advise upon the system to be adopted, of which commission my brother, Werner Siemens, who had been engaged before with kindred subjects, became the most active member. The commission was in favor of an underground system, and charged Werner Siemens to institute experiments.

Directory of Annual Meetings.

Association of Railway Telegraph Superintendents meets at Atlantic City, N. J., June 19, 1907.

Commercial Cable Company meets the first Monday in March, at New York.

Gold and Stock Life Insurance Association meets the third Monday in January, at New York.

Great North Western Telegraph Company meets the fourth Thursday in September, at Toronto, Ont.

International Association of Municipal Electricians meets at Norfolk, Va., at a date to be named.

Magnetic Club, business meeting, meets the second Thursday in January, at New York.

Old Time Telegraphers' and Historical Association meets at Washington, D. C., October 9, 10, 11, 1906.

Postal Telegraph-Cable Company meets the fourth Tuesday in February, at New York.

Telegraphers' Mutual Benefit Association meets the third Wednesday in November, at New York.

Train Despatchers' Association meets at Boston, third Tuesday in June, 1907.

The stockholders of the Western Union Telegraph Company meet the second Wednesday in October, at New York; election of officers occurs on the third Wednesday in October.

Considerable damage is continually being done to the Postmaster-General's telegraph system in England, by small boys breaking insulators by catapult shooting. Some of these offenders, says the London Electrical Review, have damaged large numbers of insulators, and one (though he was not a small boy, being aged eighteen) was convicted. At the court it was stated that the maximum penalty is two years' hard labor, a fact which, if better known, might deter some of the culprits. In this instance, a fine of \$10 including costs was imposed, or in default one month's imprisonment.

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The Magini Improvements for Practical Telegraphy.

Signor Magini, an Italian electrical engineer, inventor of several useful innovations in the field of electro-technics, claims a far-reaching improvement in practical telegraphy, says an English contemporary. The claims of Signor Magini are set forth as follows:

By very simple means, it is asserted, that defective insulation can be overcome and the capacity of the wires or "leads" can be vastly increased. Perhaps, if substantiated, the most important claim is that which has reference to injured cables, since it is stated that these can be again brought into service. If this invention fulfills all that is anticipated by the inventor, a great impulse will undoubtedly be given to the science of telegraphy. Signor Magini has recently been devoting much study to the operation of the coherer inserted above a telegraphic wire subjected to electric vibrations originating from a low power induction coil. His observations have led him to the discovery of an extremely simple arrangement which he thinks solves various problems still existing in everyday telegraphy. In addition to this, the device works equally well whatever the distance between the telegraphic stations and whatever the material condition may be of the wires in use on existing lines. There would thus be no need to make alterations in existing services, but it may be pointed out that with the new system telegraphic communication may also be carried out under existing generic conditions by means of very thin wires, instead of the thick and expensive conductors now generally employed—a point of exceptional importance, especially in connection with the erection of new installations. All competent persons will at once recognize the importance of the innovation from these brief remarks as to the actual conditions of telegraphic wires. As a matter of fact, interruptions in telegraphic services depend almost always upon defective insulation of the conductors (especially during bad weather), upon short circuits; fortunately, all these causes have no effect at all upon the transmission of the new currents selected and practically employed by Signor Magini. These currents are of an oscillating character and neither disturb nor are disturbed by ordinary currents—a fact the significance of which cannot escape the attention of those who understand anything about telegraphy; furthermore, they have the singular property of rapidly passing over electric conductors even when such leads are imperfectly insulated (whether due to bad weather or other causes) or if they have not been insulated at all, and also if short-circuited to earth, or if the continuity be interrupted. To put the matter briefly, it is claimed, the new Magini system insures perfect telegraphic communication under even the worst possible conditions in the electric status of the leads.

Magini's transmitter comprises a small Rhumkorff coil, into the primary circuit of which there are directed, by means of a special key, the currents emanating from a few cells of dry batteries, while one of the terminals of the secondary circuit is

placed in communication with the lead. The current induced, by a special arrangement of the circuit, which is as simple as it is original (both at the transmitter and receiver ends), is transformed into a vibratory pulsating current. At the receiving station it reaches a coherer of special construction and causes the operation of any suitable telegraphic apparatus, using either Morse signals or printing signs, on the Hughes principle. This coherer (which apparently differs entirely from all coherers hitherto known) establishes or breaks its coherency with rapidity and certainty; once placed in operation it continues to work with perfect precision, all the drawbacks (such as excessive sensitiveness, always causing great variability) common to other types so far known having been successfully done away with. This new coherer will, therefore, be of value for use in connection with wireless telegraphy. Although only a few volts are used at the transmitting station, and while there are only two dry cells at the receiving centre, messages can be safely forwarded over distances amounting to hundreds of miles; hence with the new Magini system the use of cumbersome and expensive batteries of cells or accumulators at telegraphic stations becomes a thing of the past.

The new system practically admits of duplex telegraphy, without recourse to the actual complicated means employed—means which necessitate scientific and special technical knowledge on the part of the employee, and which, furthermore, are exposed to all those multiple causes which induce modifications in the electric condition of the wires, thus necessitating continual variation and readjustment of the electric accord existing between the different offices or stations. When mounted in derivation on the two extremes of an electric wire Magini's transmitter and receiver do not necessitate any alteration in existing plant, and two different messages can also be sent over the same wire at one and the same time. A further and very valuable application of this system lies in its practicability for use in submarine work; not only does it double the power of the cable, but it also enables two messages to be sent together over one and the same cable. The high charges made for sending telegrams over long submarine cables is due to their low capacity, when considered in proportion to time, and to the large amount of capital invested therein. The possibility of doubling their present capacity and of transmitting two messages at once will therefore be equivalent to reducing the present charges for cables by about one-half. As the currents employed by Magini have the peculiar property of being able to leap over gaps or breaks in the leads and continue their journey undisturbed, this gentleman has been able to maintain uninterrupted communication over wires and cables the inner core or conductor of which has been broken—i. e., under conditions with which existing methods would have been entirely unable to cope. Consequently, should a submarine cable become worn out or unserviceable for any other reason (e. g., accidental breakage of the core during laying, infiltration of sea water and consequent rusting due

to electrolysis, or *hoc genus omne*), telegraphic communication can, notwithstanding, be kept up with Magini's system until the long and costly operations of fishing up and repairing the cable are completed.

Government Ownership of Railroads.

There has been a lull of late in Postal telegraph clamor, the latest fad coming to the surface being the demand of Government ownership, State and National, of railroads. Regarding this subject the following, taken from the *Railroad Gazette*, will be read with interest:

In the May number of the "*Revue Politique et Parlementaire*," the place of honor is given to an article dealing with the results obtained on the State railroads of Belgium as compared with those on the companies' lines in France, more especially the Nord.

The writer is apparently unbiased, and the article is written with a view of enabling the French public, before whom the question of the purchase of the Western Railroad of France has recently been mooted, to form some conclusion on the relative advantages of company and state control. He first of all points out the fact that, generally speaking, in democratic countries such as France, Great Britain and the United States, the railroads are worked by companies, whereas in monarchical countries—Germany, Austria and Russia—they are worked by the state, and he points out that the fact that the most business-like nations all have their railroads managed by companies is a strong argument in favor of that course.

It is six years since Monsieur Renkin, of the Central Section of the Chamber of Representatives in Brussels, made his historic attack upon the Belgian railroads, and the writer of the present article shows that instead of improving, things have gotten even worse since that date. In order to be perfectly fair he chooses the Northern Railroad of France as the nearest to Belgium and the one under the most similar conditions. He shows that the cost of administration in every department has gone up since the state acquired control, that whereas the French railroad is operated for fifty-two per cent. of its receipts, the working of the Belgian railroad absorbs sixty per cent., and this in a country where the population is three times as dense, where iron is considerably cheaper and where the receipts per mile are much higher. He gives endless figures to show that this does not arise from better service, that the trains are much slower and much more unpunctual than over the frontier. He shows that the wages paid in Belgium and the conditions of the employees are not a whit better than in France, and that, in fact, the only people who benefit have been a number of higher officials whose posts did not previously exist, as well as the members of the Chamber of Deputies.

That he is not alone in his contention he shows by quoting from members of all political parties,

including the socialists, one of whom showed that whereas the average speed of the best express trains on the Nord Railway was from 44 to 59 miles per hour, it dropped to 31 as soon as the trains crossed the frontier, in spite of the fact that the levels were much better.

The second installment of this article is continued in the June number of the "*Revue*." In this the writer shows that the one and only excuse for nationalization has been that the workers themselves are better off under the state than under a private company, but his figures show that whatever may be the case in other countries, in Belgium quite the contrary has taken place. The insufficiency of wages paid, which are in many cases as low as 42 cents to 57 cents a day, show this. As the result of a great deal of agitation, the ministry has now fixed the minimum salary at 2 francs 40, or, say, \$3.25 a week, and this in a country where living is none too cheap. Guards get 83 francs, say, \$16 a month, while brakemen start at 53 cents a day. The hours of work are apparently as bad in Belgium, if not worse, than elsewhere; fifteen, sixteen and eighteen hours a day are worked by guards, and the writer shows that frequently the regular allowance of eight hours' rest between the two services is interrupted. In short, neither the taxpayer nor the worker, nor the traveling public appears to derive any advantage from the fact that the Belgian railroads are owned and worked by the state.

The Ubiquitous Telegraph Pole.

In these go-ahead days a street pole, or standard, is often made to serve a variety of purposes. A recent photograph in the "*Daily Graphic*," London, Eng., depicts such a pole at Goodmayes, Essex, which is used as ventilating shaft, telegraph pole, signpost, electric light standard, fire alarm, and, in addition, is used by the Urban District Council as a notice-board.

A Unique Labor Day Representation.

The telegraphers of Birmingham, Ala., had a float in the civic procession of Labor Day, in which a quadruplex received practical illustration. On the float were two fully equipped quad tables, one representing Chicago and the other Birmingham. Four expert telegraphers manned each table and a chief operator looked after each office. At the Chicago table were J. E. Rowe, chief, and T. J. Garrison, J. J. Montgomery, C. J. Raley and C. A. Power, operators. At the Birmingham end B. F. Shrimpton, chief, and R. C. Jones, A. W. Thompson, W. J. Brannon and L. F. Matthews. An especially prepared Labor Day telegram was repeatedly transmitted over the wire and delivered to spectators along the line of march. Streamers on either side of the float were labeled: "Commercial Telegraphers, Local 26." "Quaded wire, four messages passing simultaneously."

Some New Tales of the Telegraph.

Reminiscent of the days when, in our innocence, we looked at the telegraph wires in anticipation of seeing the messages going along, is an incident that occurred the other evening in a Newcastle, Eng., postoffice, says St. Martin's Le Grande. A burly fellow in corduroys had handed a message over the counter which the clerk was unable to read. The man became indignant when he was asked to assist in deciphering the writing, and more indignant still when a refusal on his part brought the request to re-write the message. "What business is it of yours," he blurted out, "they'll read it all right at the other end." The patient official, hiding his amusement, gently endeavored to explain that, notwithstanding a natural disinclination to pry into private affairs, it was necessary that he should at least have some knowledge of the words to be wired. He offered to do the writing, but it was an unconvinced and angry man who marched out of the office with the paper gripped tight in his hand, and a not-to-be-taken-in expression on his face. "And this in 1906," murmured one on-looker. Another: Within the last month the father of a deceased depositor was asked for a specimen of his son's handwriting, and he enclosed "the only specimen in my possession." The specimen turned out to be a telegram from his son. This also was in 1906.

We have heard some good jokes recently, says the Telegraph Chronicle, of London, and strange to say, the high postoffice officials do not come out quite as well as the Newcastle laborer. He at least did not claim to know much of telegraphy. The high postoffice officials not only pose as experts, but, unfortunately for the welfare of the public service, they are the administrators of the telegraph department.

Take for instance the surveyor of the S. W. district of England; after referring to the great care with which telegraph instruments are adjusted, he stated with a gusto which at any rate conveyed conviction to his own soul, "It's all a matter of the earth." What the cryptic phrase means no man knoweth—except Mr. Rushton. Also Mr. Gattie, surveyor of the S. E. district, explained that telegraphy was "as easy as writing," but in cross-examination he admitted to two gentlemen that he knew nothing about it. Yet he was supposed to be giving valuable evidence. These incidents took place in 1906.

J. M. Barrie, in one of his stories, tells the tale of one of the members of a debating society in Thrums, giving his obiter dicta upon Burns.

"In my opeenion," said he, "Burns is immoral. I havna read him, but it's ma opeenion." Similarly Mr. Gattie is paid a huge salary to administer the telegraph service. In his opinion telegraphy is easy work; he does not know, but it is his "opeenion."

Another fine story and also a true one: Some distinguished visitors were being shown over the Central telegraph office, London, by an official from the secretary's office. He was anxious to shine, and his misuse of terminology was wonderful to listen to. At length he came to where the Dublin circuits were.

"Here you see," said he, "we are working to Ireland." The clerk was doing nothing at the moment so the big Postal gun said, "Have you Earth." "I beg pardon," responded the operator. "I don't understand."

The secretary's man smiled, a pitying smile. Of course, a mere telegraphist, without the necessary brains to be a clerk, could not rise to his immense height.

The order came: 'Ask those at Dublin if they have earth.'

Our man gasped, clutched the key and jerked out, "Here's a great official from the Secretary's department showing friends round wants to know if you have earth." The Irishman objected to being laughed at, and quickly replied: "Are you mad? What the deuce do you mean?"

The big gun heard the sounder click, but fortunately did not understand a letter of the Morse code.

"He says yes, he's got earth," the Londoner blandly informed the sightseers.

"Ah," said the big gun, "that's right, now you can work," and turning to his admiring friends he explained "If they hadn't got earth they could never have worked the machine."

It is quite possible the hero of this incident assisted in compiling the evidence of the departmental witnesses before the Hobhouse inquiry.

Metric Signs.

The French minister of public instruction has decided that all teachers throughout France are in future to employ the following distinctive abbreviations for the various weights and measures: For denoting length—myriametre, Mm.; kilometre, Km; hectometre, Hm; decametre, dam; metre, m; decimetre, dm; centimetre, Cm, and millimetre, mm. For areas—hectare, ha; are, a, and centiare, ca or m2. For measures of bulk (timber), decastere, das; stere, s or m3, and decistere, ds. For measures of mass and weight—tonne, t; quintal metrique, q; kilogramme, kg; hectogramme, hg; decagramme, dag; gramme, g; decigramme, dg; centigramme, cg, and milligramme, mg. For measures of capacity—kilolitre, kl; hectolitre, hl; decalitre, dal; litre l; decilitre, dl; centilitre, cl, and millilitre, ml. The use of the capital letters for the three largest denominations of length are intended to prevent confusion, and all the other abbreviations follow on uniform lines. The employment of full stops between the letters is officially abolished, and k. g. for kilogramme and m. m. for millimetre disappear.

Farmer Lawton Tells How Old-Time Operators Fought Indians.

"Things ain't like they used to was, and no one notices it more than we telegraphers," remarked "Old Farmer" Lawton of the Western Union Telegraph Company, at Denver, Col., according to the "Republican" of that city. When asked what he had reference to, the "Old Farmer" drew the same old linen duster he has worn in the Denver office for the past thirty-five years up around his anatomy, as much as to say, "We are not suffering with the heat here in Denver, even if our Eastern friends are complaining." Then, taking a few puffs from the same brand of stogies he has been smoking for the past quarter of a century, continued:

"Some thirty odd years ago I was working in the superintendent's office in Topeka for the Santa Fe when that road was being extended through western Kansas and into Colorado. Charley Dyer, who afterwards became Western superintendent for the road, was the operator at the front, the wires being strung in advance along with the graders in order to protect them from the Indians, who were ugly at that time. Late one afternoon about the time the graders reached the Colorado line, and Colorado soil was flying in all directions from shovels in the hands of three hundred graders, a large body of Indians swooped down upon them.

"The graders, headed by young Dyer, then a mere boy, having just returned from the war, where he had served through the civil strife as a drummer boy, dropped their shovels and picked up their carbines that were furnished them by the railroad company. A hard skirmish followed, but the Indians were too strong, and, being well mounted, were fast picking off the plucky graders as they circled around them, and with darkness rapidly approaching, it meant annihilation of the three hundred graders. At this juncture young Dyer, who had lost his telegraph instruments in the running fight, made himself still a better target for the redskins by climbing a pole and cutting the wire. Then by touching the two ends together he very coolly spelled out the words, "Indians, Indians, Indians. Help." Then he dropped to the ground and continued to pump lead into the red devils just as cool as he was in assisting to carry the wounded from the battlefield of Pittsburg Landing and other noted battles he took part in.

"His signal of distress was caught by the quick ear of Mr. W. F. Drake, the Western Union's present manager at Pueblo, Col., but then an operator for the Santa Fe at Newton, Kan. Mr. Drake immediately notified the commanding officer at Fort Dodge, Kan., where several companies of regulars were stationed, who boarded a special train and reached the graders' camp just as the Indians were closing in on them for the final blow, and saving the lives of those that had not already been killed in the engagement.

"Five or six years ago when Castlewood dam was expected to go out any minute the operator at Parker's station sat right at his key for fifty-two consecutive hours without a wink of sleep, in order to flash a warning to Denver people in case the dam gave way, knowing the wires would go with the flood five or ten minutes later, and the good people of this city living near Cherry creek had faith in that operator, knowing well that his warning would reach them in time for them to remove their families out of the path of the anticipated flood, and all remained in their homes during those anxious hours.

"The Hon. M. J. Bartley, a prominent attorney of this state, was manager of the telegraph office at Fairplay in 1879. He received a tip from one of the operators down in South park that Chief Piah and his renegade Utes were heading for the county seat of Park county, where many people still lived that had not yet been scalped. Bartley gave the warning. The people had confidence in him and all gathered at the court house, where the men folk could have protected their families against five time the Utes' force. Piah's advance runners took in the situation, and the band changed their course over into Middle park, where they contented themselves by making their annual raid upon the few scattering and unprotected ranchers.

"But, as I said before, times are different now. As an illustration, everybody knows that bears and other wild animals are still very plentiful up along where the new Moffat road runs. The other morning after we were cleared up and '30' sent on the different circuits, I must have been dozing and also dreaming, for I distinctly heard my old friend H. W. Plum, agent for that road at Corona, the highest railroad station in the world, away up there most 12,000 feet on the continental divide, calling for assistance. It so impressed me that I stepped over to his wire and gave him several calls, but received no response. As dreams are sometimes true, I concluded I would see if there was really any protection to the employes of the company stationed at some of the lonely depots. I again cut in on the wire and wrote out very plainly, 'Bears, Bears, Bears. Help,' spelling all words with a capital and repeated several times, but the only response I received was from some operator along the line whom I had evidently awakened, who said, 'Come, old man, get out and let a fellow sleep in peace.'

"Now, sir, it would not surprise me at all if some morning you pick up the papers and read under flaring headlines of how Rocky Mountain grizzlies are increasing their weight at the expense of Moffat railroad agents and operators, and all because operators are not as quick to go to each other's assistance as they were thirty or forty years ago."

Then the "Old Farmer" let up again and said it was time for him to get busy.

Discovery of the Mariner's Compass.

We are indebted to a magazine published about seventy years ago for the following paragraph: "Much interest must forever attach to the discovery of this instrument, and yet there are few subjects concerning which less is known. For a period the honor of the invention was ascribed to Gioia, a pilot or ship captain born at Pasitano, a small village situated near Malphi, or Amalfi, about the end of the thirteenth century. His claims, however, have been disputed. According to some, he did not invent, but improved it, and according to others he did neither. Much learning and labor have been bestowed upon the subject of the discovery. It has been maintained by one class that even the Phoenicians were the inventors; by another that the Greeks and Romans had a knowledge of it. Such notions, however, have been completely refuted. One passage, nevertheless, of a very remarkable character occurs in the work of Cardinal de Vitty, bishop of Ptolemais, in Syria. He went to Palestine during the fourth crusade, about the year 1204; he returned afterward to Europe, and subsequently went back to the Holy Land, where he wrote his work entitled '*Historia Orientalis*,' as nearly as can be determined, between the years 1215 and 1220. In chapter xci. of that work he has this singular passage: 'The iron needle, after contact with the loadstone, constantly turns to the north star, which, as the axis of the firmament, remains immovable, while the others revolve; and hence it is essentially necessary to those navigating on the ocean.' These words are as explicit as they are extraordinary; they state a fact and announce a use. The thing, therefore, which essentially constitutes the compass must have been known long before the birth of Gioia. In addition to this fact, there is another equally fatal to his claims as the original discoverer. It is now settled beyond a doubt that the Chinese were acquainted with the compass long before the Europeans. It is certain that there are allusions to the magnetic needle in the traditional period of Chinese history, about 2,600 years before Christ; and a still more credible account of it is found in the reign of Chingwang, of the Chow dynasty, before Christ 1114. All this, however, may be granted, without in the least impairing the just claims of Gioia to the gratitude of mankind. The truth appears to be this: the position of Gioia in relation to the compass was precisely that of Watt in relation to the steam engine—the element existed, he augmented its utility. The compass used by the mariners in the Mediterranean during the twelfth and thirteenth centuries was a very uncertain and unsatisfactory apparatus. It consisted only of a magnetic needle floating in a vase or basin by means of two straws on a bit of cork supporting it on the surface of the water. The compass used by the Arabians in the thirteenth century was an instrument of exactly the same description. Now, the inconvenience and inefficiency of such an apparatus are obvious; the agitation of the ocean, and the rolling of the vessel, might render it useless in a

moment. But Gioia placed the magnetized needle on a pivot, which permits it to turn to all sides with facility. Afterward it was attached to a card, divided into thirty-two points, called *Rose de Vents*, and then the box containing it was suspended in such a manner that, however the vessel might be tossed, it would always remain horizontal. The result of an investigation participated by men of various nations, and possessing the highest degree of competency, may thus be stated. The discovery of the directive virtue of the magnet was made anterior to the time of Gioia. Before that period navigators, both in the Mediterranean and Indian seas, employed the magnetic needle, but Gioia, by his valuable improvement in the principle of suspension, is fully entitled to the honor of being considered the real inventor, in Europe, of the compass as it now exists.—Electrical Engineer, London.

A Question of Nerve or Nerves.

All things are more or less hard to do, and work only will do them. Get a right idea of work. Don't trust to cleverness. It is worthy, but it will not do your work. Accomplishment demands singleness of purpose and concentration. All exterior forces tend to diversion from these essentials. Here you come in again to show your triumph of personality over environment. No matter what you do, from the humblest incidental thing of the moment to the consummation of your greatest ambition, the same principles of human activity apply. All will be clear sailing until you meet resistance, and sometimes you will run against it hard. Then you will find whether you have nerve or nerves. No one can help you much. Your measure is being taken, and you win or lose upon the cumulative ability which you can muster as the total assemblage of native talent and all that has become a part of you through all the influences that ever entered your life. See to it that they all shape one way. You will meet some disappointment through your own faults and some because the world is not exactly just, but whoever gets approximate justice in the world is doing very well. The perfectionist has a hard time. He meets continual disappointment, especially if he is chiefly worried about the imperfections of others.—From address delivered to the class of '06 of Staten Island Academy by Walter Craig Kerr, president of Westinghouse, Church, Kerr & Co.

The opposition on the part of local authorities to the use of overhead wires by the Post Office authorities in England, continues to give trouble. Recently, at Woolwich and Stoke Newington, cases were decided in favor of the Postmaster-General, and at Kingston-on-Thames a settlement was made whereby the Postmaster-General agreed to put the wires underground when they exceeded thirty-two in number on one line of poles.

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Decision of Importance to Telegraphers.

Frank Young, of the Louisville and Nashville Railroad, was discharged August 31, at Montgomery, Ala., by Commissioner John A. Elmore, at his hearing on the charge that he had violated the law of the United States in refusing to hire members of the Order of Railway Telegraphers until they had repudiated the order. Commissioner Elmore held that the law was in conflict with the Constitution of the United States. It is possible that the test of the law will be carried to a higher court.

The charge made against Mr. Young was that on hiring B. A. Nesmith as a telegraph operator, Mr. Young required of him that he sign a written agreement not to become a member of the Order of Railway Telegraphers. This was declared by the plaintiff in this case, the United States, to be in violation of the act approved June 1, 1898, which seeks to forbid the making of any condition as necessary to the employment of anyone by common carriers acting under the direction of the Interstate Commerce Commission.

It was in effect argued by the attorney of the United States, that Mr. Young had been guilty of blacklisting, that he was dictating the conditions under which a man could be employed in the service of the Louisville and Nashville Railroad, and dictating in violation of an act of Congress.

Commissioner Elmore declined to accept this view of the case. He held that the act under which the charge was brought, was unconstitutional. It was his opinion that in the passage of the law, Congress invaded the rights accorded the individual under the Constitution. Mr. Young was, therefore, discharged.

The opinion of the Commissioner in part follows:

"The defendant herein is charged with having violated Section 10 of an act concerning common carriers engaged in interstate commerce, and their employees, in this:

"That the said Frank Young, agent as aforesaid of said Louisville and Nashville Railroad Company, on the 26th day of May, 1906, in the County of Montgomery, in the Middle District of Alabama, did require one B. A. Nesmith, a telegraph operator, who was seeking employment as a railroad telegrapher, whose duty is the handling of train orders by wire, and who is a person employed and actually engaged in train operation, or train service, over said Louisville and Nashville Railroad Company, as condition of the employment of the said B. A. Nesmith, by the said Louisville and Nashville Railroad Company, to enter into a written agreement not to become a member of the Order of Railway Telegraphers, a labor corporation, contrary to the form of the statute in such case made and provided in violation of Section 10 of the arbitration act of June 10, 1898, and against the peace and dignity of the United States.

"Defendant has demurred to the affidavit upon which this prosecution is based, and has assigned numerous grounds therefor. However, that to which the attention of this court is specifically invited is the one which raises the constitutionality of said act. The Commissioner is of the opinion that a decision upon this demurrer controls the whole, and, therefore, will take up that question.

"The fifth amendment to the Constitution of the United States provides: 'No person shall be deprived of life, liberty or property, without due process of law.' Section 8, subdivision 3, of the Constitution, provides that 'The Congress shall have the power to regulate commerce with foreign nations and among the several states, and with the Indian tribes.' This certainly gives the Congress power to regulate commerce among the several states; but does it give Congress the power to prescribe the character of contracts between common carriers and employees? The fifth amendment to the Constitution, we have seen, guarantees that 'No person shall be deprived of life, liberty or property, without due process of law.' Does the right to contract by a common carrier with an employee come within the scope of this amendment? These terms, 'Life, liberty and property' are representative terms, and govern every right to which a member of the body politic is entitled under the law, within their comprehensive scope are embraced the right of self-defense, freedom of speech, religious and political freedom, exemption from arbitrary arrest, the right to buy and sell as others may—all our liberties, personal, civil and political—in short, all that makes life worth living; and of none of these liberties can any one be deprived except by due process of law.—2 Story Con. Lim. 5 Ed. Sec. 1950.

"It seems, therefore, that the power to contract between common carriers and employees comes within the meaning of this amendment. The law of the land and due process of law is defined by Mr. Webster in the famous Dartmouth College case to be 'By the law of the land is most clearly intended the general law, a law which hears before it condemns, which proceeds upon inquiry and renders judgment only after trial. The meaning is that every citizen shall hold his life, liberty, property and immunities under the protection of the general rules which govern society. Everything which may pass under the form of an enactment is not therefore to be considered the law of the land'—(Cooley's Con. Lim. 6 Ed. 431.)—After all, Congress is but the agent of the people authorized to pass laws in conformity with the Constitution, and whenever any law is passed which does not conform therewith, or is repugnant thereto, that law is void.

"I recognize the rule as before stated, that in testing the validity of an act of Congress, that courts shall be careful in their construction against its validity, and not declare an act void

unless there clearly appears an invasion of some constitutional guarantees. I have, therefore, been slow to make up my mind upon this question, but after an examination of the authorities, I find that nowhere is the right to make contracts prohibited or abridged unless it be against public policy or against the general welfare, etc.

"It is further contended that Congress invaded the rights under the Fifth Amendment of the Constitution when it prohibits an employer from entering into a contract with an employee not to join a labor organization, association, etc. It seems that an individual has a right to employ whomsoever he desires, or refuse to employ one whom he does not desire, and should not be compelled to give any reason for so doing.

"The law looks upon the acts of corporations as they do those of an individual; and, in that connection a person seeking employment may have interests antagonistic to his employer, it certainly would seem a hardship that Congress could pass a law compelling an employer to give employment to one so situated. If that were so Congress could also compel an employee to labor, against his will, for an employer against whom he had a grievance. It is contended, however, that since Congress has the power 'to regulate commerce between the states' that it has the power to make rules governing the details of such regulation. I do not think the Constitution intended to give Congress this power, for if it did it could say what certain kinds of telegraphic instrument should be used by a common carrier. I could say that common carriers should employ negro labor exclusively, or Chinese labor exclusively, or labor which believed only in certain religious doctrines, the rights guaranteed by the Constitution in passing this law, I am therefore constrained to declare the same invalid.

"The authorities as cited by the United States Attorney do not bear directly upon the case at bar.

"The demurrer to Section 10 of said act is hereby sustained, and the defendant discharged."

General Mention.

Mr. R. M. Ross, of Detroit, Mich., an old-time telegrapher, in a recent letter says thus pleasantly: "TELEGRAPH AGE is always a welcome visitor to gladden the hearts of old timers."

Mr. A. M. Livingston, a well-known southern telegrapher, who resigned the position of chief operator of the Western Union office at Birmingham, Ala., some months ago to enter the real estate field, is reported to be making a success of his new venture.

Mr. G. B. Elmore, manager of the Western Union Telegraph Company, Paducah, Ky., has this to say about TELEGRAPH AGE: "I have derived great benefit from reading the columns of TELEGRAPH AGE, and think that the names of

all connected with the telegraph fraternity, for their own good, should be on your subscription list."

Mr. W. A. Sheppard, manager Postal Telegraph-Cable Company, Montgomery, Ala., in ordering a renewal of his paper, says: "I find it easy to get the habit of watching for each issue to come around. The paper would be greatly missed if it failed to show up, as it always contains something that is of interest in all branches of the profession."

The latest whim of city councils is to pass ordinances compelling telegraph companies to paint their poles. The idea is a good one if the municipalities would only agree upon a uniform color. But when one council decrees that telegraph poles must be painted white, another that green should be the tint, and still another that a red hue be adopted, the situation becomes a trifle mixed, not to say ludicrous.

Mr. T. A. Edison has not only put a new cement on the market but takes a strong interest in cement construction. He says that new houses in the near future will largely be built of concrete. "The first step will be to employ an architect to design, say, a dozen dwelling houses of different patterns. I purpose to have metallic moulds made to correspond. The mould for each house will be made in detachable parts. There will be separate plates and small moulds that can be screwed together easily to form one mould for an entire house. That a fine finish may be obtained, the inside surface of the parts will be nickel plated. After the mould for the whole house is set up it will be a simple matter to pump the concrete into every nook and cranny. After four days the parts of the mould will be unscrewed and taken off and the solid concrete house will remain."

The German Postal and Telegraph Department has recently published statistics collected during a period of fifty-two years on the life of wooden poles impregnated with different preservative substances. The number of poles under observation amount to nearly three millions, and the following are the average results obtained:

POLES IMPREGNATED WITH—	LENGTH OF LIFE.
Sulphate of copper.....	11.7 years.
Corrosive sublimate	13.7 years.
Creosote	20.6 years.
Un-impregnated	7.7 years.

The manner of preparing the poles has been improved from time to time, and this is clearly shown in a further table giving the average length of life of the poles under different methods of treatment with each preservative at different periods. For example, in 1883, with sulphate of copper the average life was 9.4 years, while in 1903 the method of treatment had been improved so that an average life of 13.3 years could be obtained—London Electrical Review.

The Murray Automatic Page-Printing Telegraph —Its History and its Progress.

The Murray automatic system is now working between London and Edinburgh, Berlin and Hamburg, St. Petersburg and Moscow, and sets are being made for London-Dublin, Bombay-Calcutta (1,200 miles) and Vienna-Prague. The inventor, Donald Murray, is a New Zealander by birth, and evolved his system in Sydney, Australia, while engaged in newspaper work.

The story of the development of the Murray printing telegraph is rather curious. Most printing telegraphs have been exploited by companies, which have almost invariably lost money, often heavily. The Murray system, on the other hand, like a good mine, has paid for its own development. Mr. Murray constructed a working model of this and brought it from Sydney to New York in 1899 to have it patented, and to have it taken up by one of the typesetting machine companies, the idea at the back of the invention at that time being the construction of an automatic typesetter, something like the Monotype, but with telegraphic possibilities. When the model was unpacked in New York it was found to have been wrecked by careless handling in transit, and inquiry showed that there was no field worth troubling about for automatic typesetting on the lines proposed. An unknown journalist in a strange city with a smashed-up model of an invention that nobody wanted was hardly the sort of combination to win success on lower Broadway. But the model was patched up, and after the necessary patents had been taken out, it was exhibited at the Astor House. The novelty of the thing attracted attention, and although there was no field for it as an automatic typesetter, its telegraphic possibilities attracted the notice of officials of the Postal Telegraph-Cable Company, and the inventor was engaged by the company to develop it as a printing telegraph. After two years' work with the Postal company it had grown almost out of recognition and had evolved into the "Murray Automatic Page-Printing Telegraph System," and was able to transmit and print messages in page form at the rate of one hundred words a minute. "The Baby," as friends jokingly called the system, was then brought by the inventor to London, where it was taken up by the British postoffice. The infant, however, was still very delicate and required most careful nursing. After a year in London a circuit equipped with the system between London and Edinburgh was started on regular telegraph traffic. It was then exhibited in Berlin, and the German government had a set constructed to work between Emden and Berlin. What the German telegraph engineers described as "Kinderkrankheiten" or ailments of childhood were, however, so numerous that both in England and Germany the system led a very precarious existence for a couple of years, and a long series of radical improvements had to

be made before it could really be described as a success. In fact, it is only with the last twelve months that all weaknesses have been at length declared eliminated. An obstacle that has delayed progress has been the difficulty of adapting the system to meet the varied requirements of different telegraph administrations. Rival systems have also made telegraph administrations slow in coming to a decision. These obstacles, however, it is said, are now disappearing, and the Murray automatic system has proved itself to be without a rival in Europe for its own special work, namely, for long telegraph lines, underground cables, and press messages.

The Murray system in the form that it has reached in its final development consists of a group of machines at each end of a telegraph line. Several operators working on perforating machines with keyboards like typewriters prepare the messages for transmission in the form of holes punched in a narrow paper tape. The paper tapes with the messages recorded on them in this way, are then run through an automatic transmitter, a small machine which sends over the telegraph line signals corresponding with the holes in the paper tape. These signals are transmitted over the line at a speed sufficiently high to permit the transmission of the messages punched by several operators over one telegraph line. At the receiving station an electrical perforating mechanism under the control of the transmitted signals makes an exact reproduction of the transmitting tape. This received tape then runs into the automatic typewriter or "printer," which prints the messages in ordinary typewriting in page form under the control of the perforated receiving tape somewhat after the fashion of a mechanical piano. The speed of the printer is now very high, not less than one hundred and fifty words (nine hundred letters) a minute, but practical considerations of durability and maintenance of the typewriter limit the speed at present to about one hundred or one hundred and twenty words a minute. The limit of speed in transmission of the signals over the line is in the receiving perforator which reproduces the tape at the distant station. With the improved machinery now in use it has recently been found possible to punch the received tape faultlessly at the rate of one hundred and eighty-four words (one thousand, one hundred and four letters) per minute. At this speed no less than ninety-two holes per second have to be punched in the paper tape successively by a single punch. A similar group of machines in the reverse order are required for transmitting messages in the opposite direction on the same wire at the same time. It was a model of the printer, at that time in a very crude form, that Mr. Murray brought with him from Sydney to New York in 1899. In New York the electrical portion of the system for perforating the tape, transmitting the signals and perforating the received tape, was evolved. At

that time the printer appeared to be a sort of cross between a sewing machine and a barrel organ. An operator had to work the printer by turning a handle, and the machine was variously known as "Murray's coffee mill," and "the Australian sausage machine," but more frequently as "the Baby." In London the printer was very greatly improved. An electric motor to drive it was provided, and all the actions were made automatic, the machine stopping at the end of each line, running the typewriter carriage back, turning up to a new line, and starting again, and finally stopping at the end of each message, all under the control of the perforations in the paper tape. A very necessary improvement was a method of invisible correction of errors in the transmitting tape. With the system in its now perfected form, if an operator on one of the keyboard perforators at the sending station strikes a wrong key or perforates a wrong word, all he or she has to do is to press a back-spacing lever and a "rub-out" key once for each wrong letter. This action punches the erroneous portion of the tape full of holes so as to obliterate the wrong letter or letters. This obliteration is reproduced in the receiving tape at the distant station, but the printer is so arranged that it stops work for the moment during which the obliterated portion of the tape is passing through it. The result is that no trace of the error, not even a blank space, appears in the printed message.

The system has been in steady commercial use for about three years between London and Edinburgh, and a circuit is now being equipped with Murray apparatus between London and Dublin. For about eighteen months it has been working between Hamburg and Berlin. An installation of the apparatus for Calcutta Bombay (1,200 miles) is now approaching completion, and arrangements are being made for a staff of Murray experts to go out to India to install the system. A set is nearly finished for working between Vienna and Prague, and arrangements are also being made for manufacturing Murray apparatus to equip several other circuits.

It may be mentioned that Mr. Murray has been engaged by the British postoffice for a term of years to invent and develop some new printing telegraphs to suit special conditions.—Scientific American.

Cement Bases for Wooden Telegraph Poles.

Up to date, wooden telegraph poles remain in most countries the cheapest in first cost and in many respects as desirable as any. The question of durability, however, has been a sore point to those in charge of equipment and maintenance. All sorts of preservative solutions and all kinds of treatment therewith—pressure, vacuum, a combination of the two, etc., have been tried, but the wooden mast still remains more perishable than the iron, and its renewal means an expensive piece of work, outside of

the cost of the pole itself. Happily, however, a new idea has been evolved from the depths of someone's moral consciousness or the heights of his inventive faculties, and according to which not only new wooden poles may be made more durable, but those which are already rotten at the base may be utilized to advantage and given a longer second life than the first. What is particularly gratifying to telegraph and telephone companies is the fact that this process is not patented, and from the point of view of first cost not too burdensome.

The process consists in mounting the pole in a socket of cement beton, with which, however, it does not come in direct contact. When we say "in a socket" we err in the matter of technical accuracy; for in the later forms of mounting there is a space between the foot of the wooden pole and the top of the cement base. The pole is attached to the base by four iron splice-plates or fish-plates. The cement base stands eight to ten inches above the ground level, and is a prism of the same diameter as the pole which it has to carry. On account of the severe leverage tending to break it off, it is strengthened with iron in the well-known manner of Monier or Coignet. The attachment of a wooden pole to such a foot takes only about twenty minutes; and the same is true in the matter of replacing one pole by another. To put a cement base on an old pole with a rotten foot the latter is sawed off about eight to ten inches above the ground and without removing the wires lifted a couple of feet away and leaned to one side; the old rotten foot is then removed, the hole somewhat enlarged, the ready-prepared cement stump or base is set in the hole and well rammed in and the old pole then attached to the cement base by the fish-plates, leaving, say, two inches between the two. The life of a pole thus mounted is reckoned at sixteen years. As regards the resistance of the cement base to breakages—that has been settled beyond question by the simple means of attaching a rope to the top of several poles and pulling horizontally thereon until something gave way. That "something" was in every case the wooden pole, and the break took place in every instance just where it was expected, namely, right above the cement base, or rather the fish-plate.

The bases are molded in a plain prismatic box, well rammed in, and left two or three days in the mold to set; they are then firm enough to handle without danger of injury. The bases are left to dry another week after removing them from the mold.—Scientific American.

It is in contemplation to organize a field telegraph section in connection with the Ottawa, Ont., garrison. The total establishment will consist of fifty-four men of all ranks, and twenty-seven horses. It is expected to have the co-operation of the Canadian Pacific and Great North Western telegraph companies interested in the scheme, as the staffs will be invited to join the corps.

The Associated Press.

(From the Service Bulletin.)

Mr. E. F. Lefevre has been correspondent of The Associated Press at Panama for a number of years. He distinguished himself in newspaper work in America before going to the Isthmus. He is Minister of Telegraphs under the Republic of Panama. His brother, Edwin Lefevre, is well known as a magazine writer, having achieved fame as the author of a series of Wall Street stories.

Mr. Claude Powell, day chief operator of The Associated Press, at Chicago, has been compelled temporarily to relinquish his position on account of serious trouble with his eyes. He is now on the family farm at Burlington, Kansas. Reports from there bring information of improvement, but it will be some time before Mr. Powell can resume work. Mr. Powell is one of the oldest and most efficient operators in the service, and a great deal of sympathy is expressed over his condition.

The staff of the Philadelphia office of The Associated Press presented on August 5 a silver loving cup to Samuel H. Jones, night manager, who recently retired in order to devote his time to the Athletic Baseball Club, of which organization he is a stockholder. The ceremony took place at a dinner served at the Pen and Pencil Club. W. A. Connor, superintendent of The Associated Press service in Philadelphia, made the presentation speech. Among those present were E. C. Abrams, J. H. Reitingier, J. S. McGlynn, S. R. Long, L. D. Chafee, J. F. Donnelly, J. J. Belzer, P. A. Weadon, J. A. McLeod, J. H. McGrorty, J. C. Dunn and E. L. Heilman. Mr. Jones entered the press association service in February, 1877, during the Tilden-Hayes controversy, at the instance of the late William G. Jones, his brother, who was at that time manager of the Philadelphia office of the New York Associated Press. His first work was to transcribe with a stylus much of the matter relating to the Tilden-Hayes contest which was carried for the New York Associated Press by the telegraph companies. Typewriters then were not in general use and The Associated Press' one leased wire between Washington and New York could not carry the great volume of news of that famous affair. Later Mr. Jones became the night reporter, and was night editor when he resigned in the early part of 1892 to go with The United Press. He remained with The United Press as a night editor in New York and then as day editor in Philadelphia until 1897, when that organization gave up the fight against The Associated Press. Mr. Jones then became connected with the latter association as day reporter, and eventually took charge of the office at night.

The Baudot system of telegraphy was tried between Madras and Bombay, India, on July 7, and most successful results were obtained.

Death of Edward Rosewater.

Edward Rosewater, editor and proprietor of "The Omaha Bee," Omaha, Neb., and prominently identified with the political, financial and business affairs of that city and state died suddenly of heart failure August 30.

Mr. Rosewater was emphatically what may be termed a self-made man. Graduating from the telegraph service he reached a high position in journalism, in which profession he attained a national reputation. Born in Germany, January 28, 1841, and coming to this country in 1854, he began his telegraph career at Cincinnati in 1858. His quick intelligence and abilities as a telegrapher, speedily secured his advancement. In the spring of 1861 he was employed at Nashville, Tenn., a position he continued to hold until that city was surrendered to Gen. Buell, of the Union army. Young Rosewater promptly tendered his services as an operator to Col. Thomas A. Scott, then assistant Secretary of War, and shortly thereafter became a duly enlisted member of the United States Military Telegraph Corps, at Wheeling, W. Va., afterward accompanying Gen. John C. Fremont throughout his West Virginia campaign. He saw service in the Washington navy yard, subsequently serving on the staff of Gen. John Pope. At the second battle of Bull Run, covering three days, he transmitted all of the General's despatches from the field of battle. On September 1, 1862, he was assigned to duty in the War Department. Resigning from the military telegraph service in the fall of 1863, he went to Omaha, where for seven years he was manager, first of the Pacific Telegraph Company, and then of the Western Union Telegraph Company. It was on June 19, 1871, that he founded "The Omaha Bee." His interest in public affairs at once developed. He was an active candidate for United States Senator in 1901, and again in 1906, but was defeated both times. He always retained his interest in telegraphy and was a member of various telegraphic bodies. He was vice-president of the United States Military Telegraph Corps during one term, and had been a member of the congressional committee of that society ever since its organization. He was president of the Old Time Telegraphers' Association in 1892.

OBITUARY NOTE.

Ray French, aged twenty-eight years, manager of the Western Union Telegraph Company at Fostoria, O., for the last ten years, died August 27 after an illness of a year and a half.

The testimony of progressive operators is that TELEGRAPH AGE is so thoroughly comprehensive in character as to make it absolutely indispensable to those who would keep informed. Its technical articles are of high practical value. Write for a free sample copy.

The new classified catalogue of books on the telegraph, telenhphone, wireless telegraphy, electricity, etc., published in TELEGRAPH AGE, may be had for the asking.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.]

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

RICHMOND, VA., WESTERN UNION.

A general overhauling of the wires in this district is in progress, especially on the line between Richmond and Washington, which is being entirely rebuilt. A small army of linemen is on this latter piece of work and their efforts coupled with frequent thunder and lightning storms relieve the wire-chiefs of any monotony. The two most important routes south, the Seaboard and Southern, are also undergoing extensive repairs. The new lines are splendid examples of up-to-date telegraph construction.

H. H. Cramer, for two years our night wire chief, has resigned to become postmaster at Ashland, Va. He will be succeeded by T. B. Maher, of this office.

Miss Lilly Hutton, of the Commercial News Department; Miss Annie Kuyk and Miss Florence Owens are spending a week at Harrisonburg, Va., Miss Nettie Perry, manager, at Kinston, N. C., is filling Miss Owens' place.

Mr. J. E. Hall has just returned from a two-months' trip to England.

We notice a marked increase in the number of automatic transmitters being used by operators here and in other offices. They seem to give perfect satisfaction.

Among new arrivals are: E. C. Hardison, W. P. Buckley, W. B. Keister, W. B. Shackleton, E. M. Doyle, J. K. Edwards, G. K. Browning, C. L. Miller, J. F. Blount, P. R. Anderson, S. V. Moody, J. A. Farlev, H. O. Bannister, M. Bickers, J. M. Johnston, H. A. Pugh and Miss Rose Goshen.

The inauguration of bell systems between the principal repeater stations in this division has proven most helpful in testing. They are worked for the most part on the common sides of quads.

The manager of one of our North Carolina offices when told recently that a wire had been open in his office, replied that "It couldn't possibly have been here because I had all the plugs out of my board." It afterward developed that when we went home he took with him all the plugs in his switchboard.

PHILADELPHIA, WESTERN UNION.

Mr. J. C. Strickland, of the Record, Western Union office, and V. G. Hudgins, manager for the company's office in the produce district, have the

sympathy of many friends in the death of their respective fathers.

The death recently of the wife of Superintendent C. M. Lewis, of the Philadelphia, Reading and Pottsville Telegraph Company, is an especially sad event, as it marks the third bereavement that has befallen Mr. Lewis within the past two or three years, the first being the death of his daughter and the second that of his son.

Miss Mary McLaughlin, an operator well and favorably known to the older employees here, died several weeks ago from an incurable disease from which she suffered for the last six or seven years.

W. E. Wineland, a well-known employee of this office, is seriously ill.

W. S. Hess, of the Pennsylvania Railroad Company, Harrisburg, was a recent visitor.

Manager Richards, of Carlisle, Pa., and his sisters, Mrs. Bedford and Miss Richards, the latter his able assistant, spent a portion of their vacation at Atlantic City, N. J.

Recent arrivals are: Jos. Hallman, of the American District Telegraph Company, this city; Frank McCaulley, formerly manager at Chambersburg, Pa.; J. C. Landon, New York; H. M. Bennett, H. Hill, W. H. Biddle and J. E. Dunne from the Postal Telegraph-Cable Company, this city, and H. A. Leavitt, who was with us several years ago.

The resignations are Messrs. McIntyre, Kloefer, Ramson and Lerner.

John Rowles, a promising young operator, brother of Ralph Rowles, is now successfully looking after this company's interests at Fortieth street and Gerard avenue, vice Mabel Clark, transferred to the main office.

Mr. Joseph Mullin has had a vacation of one month, during which time W. J. Seymour substituted for him.

NEW YORK, WESTERN UNION.

Mr. M. W. Jones, formerly with the Long Island Railroad, and late of this office, has resigned to accept a position as train despatcher with the Panama Railroad, and has sailed for the Isthmus.

Traffic Chief A. M. Lewis of this office, qualified at Creedmoor range last week as marksman and sharpshooter of the Twenty-second Regiment engineers. At present Mr. Lewis is absent on his vacation.

Miss Lynch, city wire chief, and Mr. J. L. Laidlaw, Erie traffic chief, have both returned from their vacations.

Miss Nora Conklin is spending her vacation in the Catskill mountains.

Miss Julia Gillman, formerly of this department, daughter of Andrew J. Gillman, was married to Mr. John Hannigan, of the New York Fire Department, on Monday evening, September 3. After the ceremony a reception was held

at the home of the bride's parents. A large number of friends from this office were present, and lots of rice and good wishes followed the young couple as they started on their honeymoon for Lake George, N. Y. Mr. Gillman, the father of the bride, has been a prominent figure in the operating room during the past thirty years.

Mrs. Nance, wife of James H. Nance, and daughter of Division Chief Conrad A. Meyer, died Thursday, September 8, at Easton, Pa., where she had gone to visit relatives but five days previous, apparently in the best of health. Appendicitis developed late Wednesday night, and an immediate operation was deemed necessary. Mrs. Nance was removed to the hospital and died while undergoing the operation. Prior to her marriage Mrs. Nance was employed here and was a great favorite. The expressions of profound sympathy for the bereaved husband and parents were most marked, and the floral tributes from the office, friends and organizations of which her husband and father were members, were handsome and numerous. The funeral services were held on Sunday, the 10th inst.

NEW YORK, POSTAL.

Robert C. Low, quadruplex chief of Pittsburg, Pa., was a recent visitor. He was greatly interested in the up-to-date equipment of this office.

This company now has pneumatic tubes in operation to the cable office, 20 Broad street; to the Cotton and the Produce exchanges. Mr. W. H. Kelly is in charge of the tubes at the main office. A large volume of business passes through these tubes.

Manager F. F. Norton has returned from his vacation.

Mr. Geo. H. Wiser is also back from his vacation.

Messrs. P. E. Kries and S. H. Eaton have resigned.

Among recent arrivals are W. W. Wilson, Paul C. Lacey, W. T. Shaw, H. Johnson, W. D. Howard, Joseph Lane, C. H. Waggener, F. X. Duenwald, P. Schwartz, T. A. Tarvin and F. E. Robinson.

Mr. Walter S. L. Cleverdon, son of John F. Cleverdon, of the electrical engineers' office was married September 1 to Miss Jessie Eylmer Thomson, of New York.

"Pocket Edition of Diagrams," etc., the latest revised edition, 334 pages and 160 illustrations, published by TELEGRAPH AGE, contains just the information every telegrapher requires, irrespective of his position.

Orders for books on telegraphy, wireless telegraphy, telephony, all electrical subjects, and for cable codes, will be filled by TELEGRAPH AGE on the day of receipt.

Bond Issue by the Western Union Telegraph Company; Quarterly Statement.

The Western Union Telegraph Company issued to its stockholders September 12 a call for a special meeting on October 10, to authorize an issue of \$25,000,000 thirty-year 4 per cent. convertible bonds. Proceeds from this proposed issue will be used in general extension of the company's existing lines, the construction of additions and the purchase of new property. If the stockholders approve the plan outlined at the directors' meeting, bonds amounting to \$10,000,000, convertible into stock at par, will be issued at once. They will be offered to the stockholders first, for subscription "pro rata, on such terms as may be determined by the board of directors or the executive committee." Subscribers will have the privilege of assigning their rights to the bonds.

The circular to the stockholders, setting forth the details of the proposed bond issue, declared that from 1881 to June 30, 1905, there had been expended by the company for extensions of lines and new property a total of \$39,074,066. Of this, \$23,755,066 came from net earnings above interest and other fixed charges, \$13,319,000 from the proceeds of an issue of \$20,000,000 real estate bonds over the amount required to pay off the old bonds, and \$2,000,000 from stock sold in 1897. Continuing, the circular says of the growth of the company which renders necessary this new bond issue to obtain funds for extension of lines:

"During the last few years the rate of growth of the business of the company and the consequent demand for increased facilities have been greater than during the previous year, and the expenditures for construction and new property have been consequently correspondingly increased. All of the \$20,000,000 4½ per cent. real estate bonds authorized by the stockholders in 1900 have been issued; of these \$6,681,000 were required to redeem maturing 6 and 7 per cent. bonds; \$2,076,500 were issued to pay for new property acquired and new lines constructed prior to June 30, 1899, and \$11,242,500 were issued for construction and new property since June 30, 1899."

The Western Union Telegraph Company reports for the quarter ending September 30, the figures for this year being partly estimated, while those for the same quarter of 1905 are actual:

	1906 (est.)	1905.	Changes.
Net revenues	\$2,000,000	\$2,007,593	Dec. \$7,593
Interest on bonds.....	332,688	331,300	Inc. 1,388
Balance	\$1,667,312	\$1,676,293	Dec. \$8,981
Dividend (1¼%)	1,217,022	1,217,021	Inc. 1
Surplus	\$450,290	\$459,272	Dec. \$8,982
Previous surplus	16,848,728	15,974,209	Inc. 874,519
Total surplus	\$17,299,018	\$16,433,481	Inc. \$865,537

In the statement just submitted the actual earnings are furnished for the quarter ended

June 30 last, the close of the company's fiscal year. It is therefore possible to append the actual figures for the last two fiscal years:

	1906.	1905	Changes.
Net revenues	\$7,070,582	\$7,188,065	Dec. \$117,483
Interest on bonds	1,327,975	1,227,200	Inc. 100,775
Balance	\$5,742,607	\$5,960,865	Dec. \$218,258
Dividend (5%)	4,868,088	4,868,083	Inc. 5
Surplus	\$874,519	\$1,092,782	Dec. \$218,263
Previous surplus	15,974,209	14,881,427	Inc. 1,092,782
Total surplus	\$16,848,728	\$15,974,209	Inc. \$874,519

The Railroad.

Mr. Charles E. Lee, the newly appointed general manager of the Boston and Maine Railroad, is forty-six years of age. Mr. Lee began his career as a telegraph operator.

Mr. W. S. Melton has been appointed superintendent of telegraph of the Cincinnati, New Orleans and Texas Pacific Railroad, with headquarters at Chattanooga, Tenn., succeeding George L. Lang, resigned.

Frank W. Mahin, consul at Nottingham, England, reports that the Great Western Railway has successfully experimented with and just installed on a branch line a method of audible signaling as a substitute for the familiar semaphore system which it is believed will be entirely displaced in course of time. The new system is electrically worked. The engine as it travels comes into contact with an apparatus fixed to the track, which is worked from the signal box, and sets in motion a form of mechanism on the engine. Instead of the engineer having to look out for his signals, they declare themselves to his ear unmistakably. "Line clear" is expressed by the blowing of a whistle, which continues until the engineer with his own hand turns it off. The new system is of particular importance in a country so fog-afflicted as England.

Consul E. L. Harris, of Chemnitz, Germany, in a recent report states: "The last issue of the Berlin Woche contains an illustrated article which shows that experiments in wireless telegraphy are being carried on quite extensively on the Berlin-Zossen line, with results which are in favor of an early adoption of wireless systems on many of the State railways. I would advise those interested in securing detailed information concerning the progress of these experiments to address a letter of inquiry to Zimmerstrasse 37-41, Berlin."

The Mexican war department has requested the department of communications and public works to establish telegraph connections between the City of Mexico and San Juan Teotihuacan, the famous old City of the Gods, where the government is now spending large sums in restoring the ancient pyramids and in making excavations in the buried city. It has been found that there is at present a great deal of difficulty in communicating orders to the regiments stationed there, especially if these orders are of an urgent character. Captain Gustavo Acosta, of the engineering department, will install the telegraph system.

The New Orleans Postal Baseball Club, a group photograph of which has just reached us, embraces a set of sturdy, manly looking fellows whose record on the field of action has given them an enviable reputation in athletic circles. The patron saint of the club is Superintendent W. A. Porteous, whose picture also appears in conjunction with the eleven, not exactly as a member of the club, but rather to show the close bond of sympathy between the chief and his expert players. The team is made up of Messrs. Petrich, manager; Dobard, Lala, Bertucci, T. Koops, W. Koops, Kerwin, Miller, Botsay, Will and Stephens.

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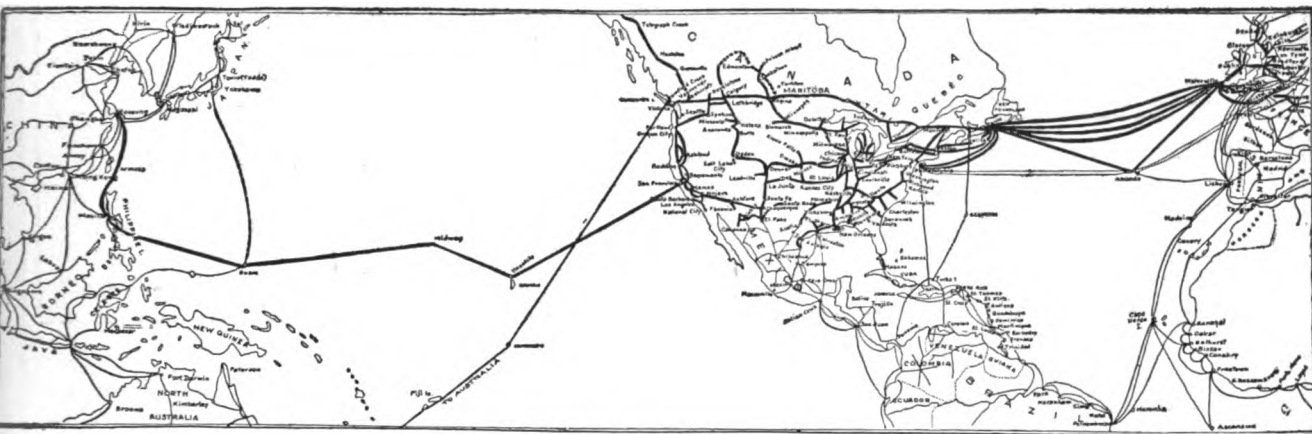
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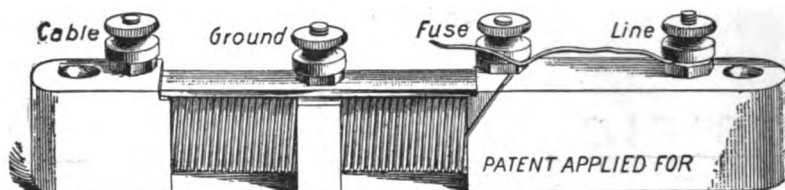
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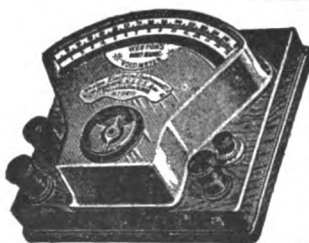
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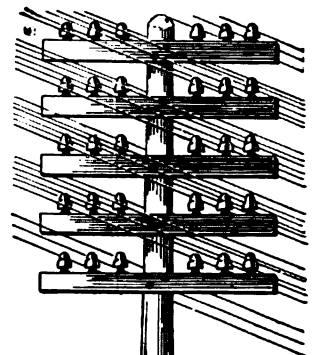
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SOME POINTS ON ELECTRICITY.

Questions and Answers.

BY WILLIS H. JONES.

(Continued.)

A correspondent asks: Can a dry cell of battery be recharged? If so, how?

If those who ask this question so frequently could first be made to understand that the so-called dry battery is a primary and not a storage or secondary accumulator of electricity, the absurdity of the question would be apparent. All primary batteries furnish current owing to the chemical activity of the material inserted between the electrodes, and only during the period the circuit is closed. When such material has been used up, the only means of renewing its vitality is to substitute new material, in the same manner as one would replace new zinc, copper or solution in a gravity or bluestone battery when the old ones were exhausted.

Secondary, or storage batteries, are of course charged in the first place by a current of electricity from another source, and can likewise be recharged when the original charge has been expended, but as dry cells are never charged, in the sense that is obviously inferred by the author of the inquiry, what would be the object of charging it? It does not operate on that principle. Finally, even were it possible and practical to

"recharge" a dry cell, the operation would not be economical, for the reason that new ones can be purchased for very little, say 15 to 20 cents retail, and much less at wholesale. It would cost more than that to open an old cell, cleanse and substitute new chemical material and put the parts together again, and even then the result would be but a second hand affair.

Another inquiry is: (a) Do small dynamo machines give efficient service in the capacity of intermediate batteries? (b) Is it permissible or advisable to use such machines as auxiliaries in connection with 4-ohm sounder circuits, such as our duplex or grounded loops on multiplex circuits? (c) Which method of running these machines is best or preferable, the belt or the motor geared?

(a) Yes, small dynamos such as our standard manufacturers construct make very efficient intermediate batteries and are fast replacing the old, or chemical jars, in all the principal telegraph centers.

(b). It is permissible during emergencies for short periods only, but is not advisable as a rule. Small machines generating an electromotive force of from 60 to 140 volts are necessarily wound with comparatively small gauge wire, and for that reason cannot safely carry so great a volume of current as the 4-ohm sounder circuit requires without becoming unduly overheated and thereby endangering the insulating material. Small machines, as a rule, are normally constructed to carry small volumes of current only, such as flow through single line, or "relay" circuits, and when used as intermediate battery in the latter only are all that could be desired if kept in proper order.

(c). So far as the efficiency of the machine is concerned one arrangement is as good as the other. As a matter of choice, however, the motor geared method is preferable for several reasons. In the first place, on account of the belt and pulley necessary for its operation, that outfit requires more space than the other machine and is also more liable to accidents due to the stretching or breaking of the belt. The latest practice is to place three or four small motor geared machines compactly behind each main wire switch-board for intermediate battery purposes, to be used when a demand is made for additional current only. The motor coil receives current from the 110-volt electric light circuit, and is shut off as soon as the services of the machine are no longer required. By this rule not only is the total amount of electric power consumed in running the machine minimized, but the latter's life is prolonged through being inoperative during the many intervals it is idle.

What is meant by the term "Electric Osmosis?"

Electric osmosis is a term used in connection with the transfer of liquids from one point to another when the movement is due to the action of an electric current. It has been noticed that if a current of electricity is passed through a liquid, the latter tends to move bodily towards the negative pole of the battery, but the movement must not be confounded with that of liquids under the influence of electrolysis. In the latter case the motion is due to the particles set free and which flow toward and collect around the two electrodes. In the case of electric osmosis the liquid tends to move bodily. If an electric current is passed through moist earth, in a short time it will be found that water collects in the vicinity of the current's path. For this reason it has been suggested that in cases of extreme drought the roots of plants and small trees might be watered by that method, but for economical reasons it would hardly be practical. In fact, up to the present time the phenomenon has not suggested any practical application thereof in the way of commercial employment.

Is $3\frac{1}{2}$ watts per candle power for ordinary incandescent lamps the minimum expenditure of electric energy that is necessary for their operation?

Until within the past year $3\frac{1}{2}$ watts per candle power has been required, although various manufacturers claim that their products demand but three watts. When new and properly made nearly all standard incandescent types may not really require more than the latter watt power, but with age they require more to maintain their initial efficiency. As previously stated, within less than a year a metalized filament has been produced which enables the manufacturers thereof to place on the market a lamp that will give the same illuminating power for one watt per candle power less than has heretofore been possible, or two and one-half watts per candle power, while at the same time possessing an equal or greater length of life. The filament is particularly available for street lamps owing to the larger sizes of lamps usually employed for that purpose and which offer better facilities for the construction of the new filament. The decrease in watt energy expended is said to be due to the comparatively smaller amount of resistance the metalized filament offers.

(To be continued.)

Recent Telegraph Patents.

A patent, No. 830,253, for a telegraph key, has been granted to Jesse T. Sheets of Covington, Ky. The button at the end of the key is swiveled and has a pin to engage the usual circuit opening switch and keep it in open relation while the key is being actuated. The switch automatically returns to circuit closing relation when the key is released.

A patent, No. 830,921, for a means for transmitting electrical impulses, has been awarded to Francis L. Orr of Thurman, Iowa. A device for sending intermittent charges of electricity comprises an electromagnet, a rotating member turned by the electromagnet and a circuit-breaker having one of its terminals mounted on the rotating member and organized as a centrifugal governor to close the circuit only below a definite speed.

The following patent has expired: Patent No. 411,198, for a telegraph key, held by A. E. Johnson, of Carson City, Nev.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Among recent executive office visitors were Jacob Levin, general superintendent, Atlanta, Ga.; Theodore P. Cook, general superintendent, and Morris T. Cook, his private secretary, Chicago, and J. P. Spanier, the company's southern European representative, whose headquarters are at Naples, Italy. Mr. Spanier will remain in this country two months. Others were S. R. Crowder, electrician of the southern division, Atlanta, Ga., and C. F. Annett, manager at New Haven, Conn.

Storage battery plants have been installed at Knoxville, Tenn., and Wilmington, N. C. Motor generator plants have been installed at Jacksonville, Fla.; Savannah, Ga., and Roanoke, Va. Motor generator plants will also soon be installed at Nashville, Tenn., and Richmond, Va.

The fifteenth anniversary of the marriage of Mr. F. J. Scherrer, secretary to Col. Clowry, president and general manager of the company, was quietly celebrated at his home in Roseville, Newark, N. J., on Saturday evening, September 22. A few of his intimate friends were present to congratulate Mr. and Mrs. Scherrer, and their daughter Miss Edith, on the auspicious occasion. Among those present were Mr. and Mrs. C. H. Bristol; Mr. and Mrs. E. M. Mulford; Mr. and Mrs. A. G. Saylor; Mr. and Mrs. Geo. F. Swortfeger; Mrs. J. H. Drakeford; Jacob Levin, of Atlanta, Ga.; M. T. Cook, of Chicago; Miss Ida Hecht; Charles E. Swortfeger; Mr. and Mrs. C. H. Murphy and Mr. and Mrs. J. B. Taltavall. Mr. and Mrs. R. E. Bristol, Mr. and Mrs. M. W. Hamblin and Mr. J. H. Drakeford, on account of either absence from the city or because of sickness, sent regrets.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

At a meeting of the Board of Directors held September 18, Charles P. Bruch was elected a director, vice E. C. Bradley, resigned. The number of vice-presidents was increased to five and Edward J. Nally, general superintendent at Chicago, Ill., was elected a vice-president and di-

rector of the company, with headquarters at New York.

The following appointments were also made, to take effect October 1: W. I. Capen, superintendent, was promoted to be general superintendent of the western division, vice Edward J. Nally; T. W. Carroll, assistant electrical engineer, was advanced to the position of superintendent of the first district, western division, vice W. I. Capen; J. F. Looney was appointed assistant electrical engineer, western division, vice T. W. Carroll.

Mr. Harman D. Jones, until recently chief clerk in the office of Superintendent C. Corbett, of the Western Union Telegraph Company, Cleveland, Ohio, has accepted a position in the complaint and claim department of this company, which is presided over by John Doran, superintendent.

The Cable.

A new submarine cable has been laid between Germany and Norway.

Cables interrupted September 26:	
Venezuela	Jan. 12, 1906
Messages may be mailed from	
Curacao or Trinidad.	
Pinheiro "via Cayenne"	Aug. 13, 1902
Santa Cruz de la Palma (Canaries)	July 12, 1906
Island of Lanzarote	Sept. 18, 1906
Steamer from Las Palmas (Canaries).	

The Commercial Cable Company has opened a new route to South America. The new line affords accelerated service and the most direct line to Pernambuco, Para, Bahia, Rio de Janeiro, Santos, Montevideo, Buenos Ayres, and other places in South America. The new line is laid between the Azores and the Cape Verde Islands and was placed in operation September 15. Formerly cablegrams from this country were sent by this company to South America through the Azores station to Lisbon and from there to the Cape Verde Islands, from which station they were transmitted direct to South American points. Traffic to South Africa also goes from Lisbon through the Cape Verde Islands, and cablegrams to South American points were often delayed through congestion at this central station. Now, however, the new line cuts out the Lisbon station for the South American service, avoiding much delay and affording an almost direct line for South American cablegrams.

The Commercial Cable Company of Cuba, as noticed in our issue of September 16, is being organized by the Mackay Companies for the purpose of laying two cables connecting the United States with Cuba. Forty years ago the Spanish government granted to the Western Union Telegraph Company the exclusive right to land a cable in Cuba. This privilege expires by limitation on December 6 of this year, and it is the purpose of the competing company to have their new connecting cables in working order on December 7. The line will extend from Havana to Key West, and thence to the Flor-

ida mainland, from which point to New York special lines will be provided. The new line will be operated in connection with the Postal Telegraph and Commercial cables. Mr. Clarence H. Mackay, president of the company, with some of his legal advisers, called at the State and Navy Departments, Washington, D. C., recently and made formal application for permission to land the Cuban cable from Havana on the naval reservation at Key West, as well as to carry a land wire across the reservation connecting with the land lines of the company. The acting secretary of the navy referred the application to the legal officers of the department in order to make sure that the government secures the usual privileges in the matter of rates and precedence in the transmission of messages as a condition of the grant..

Death of Alfred S. Brown.

Alfred S. Brown, aged sixty-nine years, who, on account of failing health, resigned the position of electrical engineer of the Western Union Telegraph Company, New York, in March, 1892, died in New York September 25, after a lingering illness. Mr. Brown was one of the best known telegraph figures in the service in the metropolis during the past forty years. He first entered the telegraph service at 21-2 Wall street in 1855 for the New York, Albany and Buffalo Telegraph Company. From 1856 to 1859 he was an operator in the Oswego, N. Y., office. In 1859 he returned to the New York office of the same company, and in 1864 was appointed manager. In 1875 Mr. Brown was appointed superintendent of the Metropolitan District of the Western Union Telegraph Company, and in 1881 he accepted the appointment to the general superintendency of the Mutual Union Telegraph Company, with headquarters in New York City. He was made electrical engineer of the Western Union Telegraph Company in 1889.

OBITUARY NOTES.

James H. F. Walker, aged thirty-seven years, an operator at Atlanta, Ga., died September 22.

P. D. Givens, seventy-seven years of age, an old-time telegrapher, died at Yemassee, S. C., September 23.

Harry D. May, aged twenty-nine years, a Western Union telegraph operator at Worcester, Mass., died in that city September 20. The interment was at Carmel, N. Y., his native place.

John H. Hood, of the quartermaster general's office, Washington, D. C., an old-time operator well known at the capital, died in that city September 14. Mr. Hood was born at Philadelphia February 2, 1828.

George W. Flower, aged forty-six years, an operator well known in Kansas City, Mo., and in St. Louis, Mo., having worked in the Western Union office at the latter point for several years, died on September 14.

Mr. Nally Becomes a Vice-President and Director of the Postal Company.

The advancement of Mr. E. J. Nally, general superintendent of the Postal Telegraph-Cable Company, Chicago, to be a vice-president and director of the company, and his consequent re-



EDWARD J. NALLY.

Who has been made a vice-president and director of the Postal Telegraph-Cable Company.

moval to New York, marks an important change in official placement. For the promotion of Mr. Nally means the bringing of one of the ablest individual forces of the system with which he has so long been associated into more intimate relations with executive management, a post for which he is eminently fitted both by long training and judicial temperament. This action on the part of the company shows clearly the following out of a policy to gather power and strengthen administrative ability at headquarters.

Mr. Nally is a native of Philadelphia, where he was born April 11, 1860. Like many another who has risen to the higher plane of his calling, he, too, commenced life as a messenger. This was with the Western Union Telegraph Company at St. Louis, September 1, 1875. As a lad he was faithful to employing interests, and early evinced traits of character, showing capability and manliness, since developed with advancing maturity, that early gained for him recognition and promotion. In 1878 he was made a clerk in the office of Col. Robert C. Clowry, now president of the Western Union Telegraph Company, and who at that time was assistant superintendent at St. Louis, from whom he derived a valuable training. Later he followed Mr. I. McMichael, now vice-president and general manager of the Great North Western Telegraph Company, at Toronto, Ont., to Minneapolis, where he had been appointed superintendent in charge of the lines formerly the property of the Northwestern Telegraph Company, now the North American Telegraph Company. Here he was appointed chief clerk

to Mr. McMichael in 1885, a position he retained until October 20, 1890, when he resigned to become assistant to the general superintendent at Chicago of the Postal Telegraph-Cable Company, his appointment as assistant general superintendent coming January 1, 1892. He was made general superintendent, January 1, 1901. Mr. Nally has always been a hard worker, a close observer and student, and is probably one of the best read men in the service.

W. I. Capen Made General Superintendent of the Postal at Chicago.

Mr. Welcome I. Capen, superintendent at Chicago of the Postal Telegraph-Cable Company, has been promoted to the general superintendency vice E. J. Nally by reason of the latter's removal to New York to become a vice-president of the company. Mr. Capen is a New Englander, having been born at Brattleboro, Vt. Like Mr. Nally, whom he succeeds, the early days of his telegraphic career were passed as a messenger in his native town in the employ of the Vermont, Boston and Montreal Telegraph Company. When he became an operator, it was through the use of the old Bain alphabet. Acquiring the Morse system, he found employment with the Western Union Telegraph Company. When the Atlantic and Pacific Telegraph Company took over the lines of the Automatic Telegraph Company Mr. Capen was then acting as manager for the latter at Baltimore, Md. Subsequently locating in Cincinnati, he returned to the service of the Western Un-



WELCOME I. CAPEN.

The new general superintendent of the Postal Company at Chicago.

ion, becoming wire chief, a position he held for several years, when he resigned to accept the management of the Cincinnati, Baltimore and Ohio Telegraph Company. Later he was appointed manager at Cincinnati of the local office of the Postal Telegraph-Cable Company, where he remained until promoted to be superintendent at Indianapolis, Ind.

From this point he was transferred to Chicago in a like capacity, and now comes this further advancement to higher office. Mr. Capen stands exceedingly well in the estimate of his company and commands the respect and confidence of those of whom he is the official superior. He is a thoughtful, well poised and well informed man, fully conversant with the requirements of the important interests over which he is called to preside, and should make an efficient general superintendent.

Wireless Telegraphy.

A patent No. 829,787 for wireless telegraphy, has been obtained by William S. Hogg, of Washington, D. C.

The Chesapeake Steamship Company has closed negotiations with the Atlantic DeForest Wireless Company for wireless equipment on its fleet of steamers plying between Baltimore and Norfolk.

During the recent visit of Mr. Marconi to Sydney, N. S., the distinguished inventor stated that he was now engaged in considering the extension of the wireless way overland from the Glace Bay station to Vancouver, hence across the ocean to Yokohama thence to Australia, making connections eventually with the chief Asiatic centers.

The military instruction camp for the Department of the East at Mt. Gretna, Pa., has proved a success, and has witnessed much work of interest. For the first time wireless telegraphy was successfully used by the signal corps. Messages were sent and received at distances of from five to 100 miles. This success was largely due to a new receiver invented by Major Edgar Russel of the Signal Corps at Washington. The main station was at the camp proper, where the "harp" was stretched between two giant chestnut trees. The other station was portable, and was operated in the field wherever the troops were engaged in a sham battle. To elevate wire which catches the sound wave a kite was used. Wherever the kite was sent up the portable instrument was put in operation and communication readily established between the troops in the field and the camp headquarters, five or six miles away. These messages were also sent as far as Philadelphia, about 100 miles.

An interesting and compact wireless telegraphic plant of the portable type has been constructed by Sir Oliver Lodge and Dr. Alexander Muirhead, the system employed being that evolved jointly by them. The installation, which is self-contained, says the Scientific American, is especially intended for military operations, and for facilitating transport particularly over difficult country it has been made as compact and light as possible, so that it can be easily stowed away for carriage by mule. It is of sufficient capacity to enable communication to be established over distances up to 50 miles across land, or 150 miles over sea. The antennae are carried by bamboo poles, of short, convenient lengths for transport, which poles, when fitted together, form a somewhat cubical structure 40 feet in height. No earth capacity is necessitated, and indeed any such connec-

tion must be avoided when it is desired to insure the greatest degree of efficiency over long distances. The transmitting and receiving installations are carried in a small cabinet and occupy the minimum of space. When in use this cabinet is supported upon a folding trestle. The necessary current is generated by means of a small continuous-current dynamo carried in a frame resembling that of a bicycle, the power being supplied by bicycle pedal action, with the electric valve system devised by Sir Oliver Lodge to accumulate the impulses. For receiving messages the Lodge vibrating needlepoint-oil-mercury coherer with telephone receiver is fitted.

Resignations and Appointments.

Mr. B. S. Round, assistant wire chief of the American Telephone and Telegraph Company, St. Louis, has resigned, and returned to Tennessee, the vacancy thus created being filled by the appointment of Arthur Koch, lately with the Burlington railway, St. Louis.

Mr. C. M. Oliver has resigned from the Canadian Pacific Railroad telegraph service at Rossland, B. C., and has established himself in the stock brokerage business at Spokane, Wash., under the firm name of C. M. Oliver and Company. Mr. Oliver was formerly well known in New York city, Rochester, N. Y., and elsewhere during a long connection with The Associated Press.

Recent New York Visitors.

Mr. Stephen D. Field, the well known electrical engineer and old-timer, Stockbridge, Mass.

Mr. F. G. Boyer, superintendent of the telegraph department, Standard Oil Company, Oil City, Pa.

Mr. R. L. Fulton, a well known business man of San Francisco, at one time a telegrapher in that city.

Mr. J. Schanher, manager, and F. S. Schanher, operator, Western Union Telegraph Company, Mount Clemens, Mich.

Mr. J. C. Cooney, manager Canadian Pacific Telegraph Company, Ottawa, Ont. Mr. Cooney was in New York to attend the funeral of his brother-in-law, Mr. Wm. Burns, who died on September 23.

Mr. George L. Lang, formerly superintendent of telegraph of the Queen and Crescent Route, Chattanooga, Tenn. After spending a few weeks visiting relatives and friends in the East he returned on September 24 to Chattanooga.

The Railroad.

The Railway Signal Association held its regular September meeting at Chicago on the 11th ult., Vice-President J. A. Peabody, Chicago and Northwestern Railway, in the chair. The attendance was very small.

Mr. I. T. Dyer, superintendent of telegraph of the San Pedro, Los Angeles and Salt Lake Railway, Los Angeles, Cal., has returned from a two weeks' visit to his old home at St. Joseph, Mo., where he spent his vacation.

Municipal Electricians.

Mr. Jerry Murphy, superintendent of fire and police telegraphs, Cleveland, O., and president of the International Association of Municipal Electricians, in his paper entitled "Advisability of Protecting Municipal Electricians by Civil Service", read before the New Haven convention of his association in August, introduces his subject, which was fully discussed, as follows:

Few questions have made such steady progress against a hard, widespread and stubborn resistance and few questions affecting Federal and civic governmental affairs have aroused more public spirit, than the merit system. From its inception it has been fought by office-holders, both by the high executives and the subordinates. Any system that affects the manner of appointment to office and places merit as the basis for securing such position is, in human nature, bound to meet with a sturdy opposition. For in public life, especially in its earlier phases, it goes hard with the professional office-seeker to have to compete, to exercise his brains, to fit himself for competency. It is so much easier to win by political affiliations than it is to establish your right through fitness for any position, and that is why the merit system at first, and even to-day in some municipalities, is vigorously opposed whenever any reform movement makes an effort to bring it about.

But leaving aside altogether the goodness it has worked from the purely political viewpoint, it has proved to all right-minded thinking men interested in the welfare of civic life beyond dispute that as a general proposition it is a splendid thing. Of course, there still remains open to honest controversy the point whether it ought to be applied to every branch of public service and particularly whether it ought to be rigid in its application to certain positions that require executive ability almost purely; that require sound and quick judgment, qualities that cannot be acquired through any special course of training. It will be generally agreed that it has served as a means of raising the standard of character and service in the diverse and manifold branches of public employment. A better class of young men has been brought into service, the general efficiency has reached a higher mark and the interests of city and federal government are looked after more closely, more faithfully and more effectively.

One reason why the merit system has brought about these conditions is simply because permanency of office depends absolutely upon fitness, upon good conscientious work. There is no room for the sluggish and the slothful, the careless, shiftless and neglectful subordinate. Work can no longer be slighted or disregarded. It must be well done. Then again the merit system tends to bring into active service, men of a better type; men with brains trained beforehand; especially to the tasks which they will be called upon to

perform if they succeed in their examinations and receive appointments. Capability and all round efficiency are brought to a better standard and interest in work has been increased.

It also tends to create a lasting ambition in the work of men who are brought under its requirements. They realize that their appointments are secured by superior ability and they therefore make special efforts to live up to the standard upon which they know high expectations will be required. Then, too, it must be borne in mind, knowing that their positions are secure for life so long as they do their work well and conscientiously, they naturally seek to further improve themselves and try for promotion. In nearly every office under the civil service system opportunities are fruitful for promotions, and these opportunities are not filled through influence or favor, but by straight, honest examinations that fully test the ability of the applicants.

Under the purely appointive system, where men are thrown out of office and work through mere changes of administration, conditions are not so favorable for good results. Knowing that a reverse to the party under which they owe their appointments means loss of position for a large number of them it must tend to bring about poor work. At least, it cannot create any lively, steady enthusiasm, a factor quite essential to efficient work. Enthusiasm in one's employment brings out the best in him. When your enthusiasm dies or begins to dwindle, then you are going to begin to get disinterested and neglectful. You will become a mere slipshod worker. You will not do, at least, anything more than is actually required of you and frequently you won't even do that much. And finally you get so that what little you do do you perform in as poor and indifferent a manner as you can. That is human nature.

The vocation of the municipal electrician is certainly a technical one. It requires years of study and application to attain even an ordinary degree of proficiency in electrical work. This study and application must be supplemented by the practical man with several more years of actual work and experience. In short, the requirements of his profession preclude, almost, the idea that the electrician can become much of a politician. If he devotes his attention to one profession—and in this day and age politics has become a profession of more or less honor—he must neglect the other. There does not seem to be a middle road in this matter. The demands on the public electrician to-day are so heavy that to meet them squarely and honestly his undivided attention, his whole energy, his entire time must be given to his calling.

For more than twenty-six years the efficiency of civil service and the merit system have been before the people of the United States; not

only in governmental affairs but in commercial business. And are we not the greatest commercial people on the face of the earth? Notwithstanding, however, from my own personal knowledge, I would say that in municipal electrical work not more than fifty per cent. of the police and fire alarm superintendents in the United States are performing their duties under the protection of the civil service plan. Not more than sixty per cent. of the municipal electrical inspectors—that official who has become, in the last ten years, such an important factor in all matters pertaining to public service, enjoy the benefits of civil service and the merit system.

W. J. Armstrong, Assistant Superintendent at Cleveland.

Mr. W. J. Armstrong, whose promotion to be assistant superintendent of the Western Union Telegraph Company, with headquarters at Cleveland, O., was mentioned in our issue of August 16, is a native of Mound City, Ill., where he was born October 8, 1865. Graduating from the high school at St. Louis, he began his career in



W. J. ARMSTRONG,
Assistant Superintendent, Western Union Telegraph Company,
Cleveland, Ohio.

the service of the telegraph as a messenger in 1880. Learning telegraphy, he became an operator in 1881, a position he retained about a year. Realizing the importance of acquiring a further education, he temporarily quit telegraph work for school and college. Re-entering the service in the Western Union Telegraph Company's employ at St. Louis, after an absence of three years, as an operator, he worked severally the Galveston cable wire, the Chicago circuits, and the New York race and stock wires. He also became assistant division chief, assistant wire chief, loop chief and timekeeper in the operating department. Later he was made chief clerk in the office of Superintendent G. J. Frankel at St. Louis, from which

position his present appointment still further advances him.

Mr. Armstrong was an efficient operator, and in the Columbian telegraph tournament, held in St. Louis in 1892, won the first prize in the "Pen and Ink Receiving Contest." He has been painstaking in every position he has been called upon to fill, and his upward progress in the service has been due to merit alone.

Determining Boundary by Telegraph.

By the flashing of telegraphic signals from Fort Egbert, Alaska, and from Vancouver, Can., the exact boundary line between the United States and Canada at the Yukon river has just been determined. A shaft of granite will be reared at the point agreed upon by the observers, and with this as a basis the long boundary stretch on the 141st meridian in the wild and unexplored country from the Arctic ocean southward to the St. Elias mountains will be marked out at some future time.

The signaling at the boundary line was done within the last few days and has just been reported to the United States coast and geodetic survey in Washington by Prof. Edwin Smith, the American agent designated by the joint boundary commission to represent the United States. Fort Egbert and Vancouver were selected as the two points from which to send the messages because their longitude is known accurately and Fort Egbert is the nearest telegraph station to the Yukon boundary line, which is about six miles distant. A telegraph wire was run to the approximate boundary station and an agent stationed there. The three commissioners waited until there was clear weather at all three stations.

The problem involved was to determine the exact point at which the 141st meridian crosses the Yukon, and the scientific method of doing this is to estimate the precise time at which a certain star crosses the meridian. On the night agreed upon the observer at Vancouver flashed to the man waiting at the boundary line the time at which he observed the star, and the agent at Fort Egbert did likewise. The boundary line man therefore got messages from both sides and was able to use these as the basis of calculation.

Thrilling adventures are being experienced by the surveyors engaged in marking the boundary line on the coast of the gulf of Alaska, about 200 miles above Sitka, according to reports to the coast and geodetic survey. Frederick Morse, chief of the party at Yakutat, has informed the survey that three of the four sub-parties under his charge will finish their work by the end of this month, but that the party working in the Alsek valley is experiencing unusual difficulties, and the men are often in peril of their lives.

TELEGRAPH AGE has helped many a telegrapher in his career. It will help you. Send for a free sample copy.

The Measurement of the Capacity and Inductance of Telegraph Lines.*

BY M. DEVAUX-CHARBONNEL.

The accurate knowledge of the capacity and inductance of telegraph lines is indispensable for the study of the propagation of the current. These two elements play, indeed, a predominant part in the modern transmission processes, where the signals succeed each other with such rapidity that the continuous current conditions are never attained. Their value has hitherto remained uncertain on account of the difficulties presented by their determination. We have to do with single-wire lines earthed at both ends, which take up the currents from industrial establishments, electric tramways or neighboring telegraph offices. Besides, since the aerial arteries are in constant use, neighboring wires interfere with each other. These two circumstances contribute to the creating of parasitic currents which interfere with the measurements.

Still, by taking certain precautions, it is possible to arrive at satisfactory results. Here is a method which was finally adopted after several trials:

Capacity.—The capacity was measured by means of a ballistic galvanometer. The influence of parasitic currents was eliminated by operating with a high E.M.F. of about 100 volts, charging the wires and taking the mean of a large number of measurements.

The imperfections in the insulation had also to be taken into account. The charging current had to be abandoned from the first, for the waste current falsifies the reading, and it is impossible to determine the necessary correction. The discharge current of the line was therefore utilized. A portion of the charge disappears without traversing the ballistic galvanometer, during the time which the discharge key takes to move from the button corresponding to the battery to that corresponding to the galvanometer, and also during the time of the discharge itself. This last time is reduced as much as possible, and is made negligible by operating on short lines. As regards the loss occasioned by working the key, we have already indicated how this can be measured by means of a condenser. The time is about a thousandth of a second, and the corresponding correction is generally below 1 per cent.

The numbers obtained show that:

1. The capacity of aerial wires is greater than their theoretical value. This is due to the fact that the theory does not take into account the presence of neighboring conductors other than the soil.

2. It varies with the moisture of the air, increasing in the wet, which is natural, since a

greater number of surfaces near the wire become conducting.

I quote some figures in microfarads per kilometre:

	4 mm. wire.	5 mm. wire.
Theoretical capacity.	0.0058	0.0060
Actual capacity, wet.	0.0105	0.0120
Actual capacity, dry	0.0087	0.0090

Inductance.—The measurement of inductance is well nigh impossible unless all direct connection with the earth is suppressed. Otherwise strong parasitic currents are superimposed upon the make-and-break currents of the battery and change it entirely.

A satisfactory experimental arrangement is obtained by means of a purely metallic coupling, consisting of two wires of different runs, but with a common termination. A Wheatstone bridge is used, with an adjustable inductance in the fourth branch. For making and breaking the circuit of the battery a rotary switch is used which reverses at every revolution the connections of the poles of the battery and of the galvanometer, so that the make-and-break currents always circulate through the latter in the same direction. The switch may revolve sixty times per second, which gives the arrangement some sensitiveness and greatly reduces the importance of the current induced by neighboring wires.

But care must be taken that the inductance thus measured is not an apparent inductance. The capacity must be taken into account in order to get the true inductance. The correction amounts to $\frac{K}{3R}$ for a homogeneous line earthed at both ends, if K and R are the total capacity and resistance. If the line includes sections of different specifications the correction is $-\frac{(R_1^2 - R_2^2)}{3R}$ for a section of capacity K

and resistance R , with the two ends separated from the earthing device by resistances R_1 and R_2 . How must these corrections be calculated when there is no earthing? The capacity being always measured with respect to the earth, the resistances must be determined with respect to that point of the line whose potential is zero. The position of this point is not known a priori. Preliminary experiments of earthing one point and changing its position have shown that a certain symmetry is established in the circuit, and that the point which equally divides the resistance of the line is that which is at zero potential in the absence of earthing.

Here follow the figures which we have found for copper lines, which are non-magnetic, in henrys per kilometre:

Aerial lines	0.00205
Underground lines insulated with gutta-percha.	0.00243
Underground lines insulated with paper	0.00198

For iron lines the figures are higher, on account of the permeability of the metal. This permea-

* Translated from the Comptes Rendus by the London Electrician.

bility varies with the different specimens tested, and also with the current strength.

The following figures are deduced from the actual inductances of two iron lines:

First line.		Second line.	
Current.	μ.	Current.	μ.
5 milliamperes..	112	10 milliamperes..	140
20 " ..	75	35 " ..	91

In practice, the telegraphic currents are comprised between 20 and 30 milliamperes, so that on the average we may ascribe the value 80 to μ, which gives an inductance of 0.0060 henrys per kilometre.

The Annual Meeting of The Associated Press.

The annual meeting of The Associated Press was held Wednesday, September 19, in the Astor Gallery of the Waldorf-Astoria, New York. There was a large attendance but as usual only a minority of the members appeared, most of the publishers being represented by proxies. President Noyes called the meeting to order. After roll-call the report of the board of directors was read. It follows:

The sixth fiscal year of The Associated Press, which ended June 30, 1906, was one of unusual activity.

The Russo-Japanese war was still on when the year began and the news service covering the closing weeks of that conflict was exceptionally excellent and correspondingly expensive. In reporting the peace conference at Portsmouth, N. H., the association achieved a distinct triumph, its reports being admittedly far superior to any others in point of accuracy, completeness and promptness. The disturbances in European Russia, covering a wide area and often developing at very remote and almost inaccessible points, tested the capacity of the organization in an unusual fashion, but, happily, the requirements of the service were met in every case and the despatches presented such a view of the situation as, for comprehensiveness and truthfulness, has rarely been surpassed.

Great care was observed in reporting the conference at Algiers and the results were most satisfactory. High-water mark in the business of newspaper reporting was reached in the case of the San Francisco disaster and the notable eruption of Mount Vesuvius.

The administration of the finances of the association has been equally satisfactory. At the last annual meeting your directors were able to give an assurance that no increase of assessments was necessary by reason of the Russo-Japanese war. It is doubly gratifying now to be in a position to report that not only was the assurance fully justified, but that within the fiscal year which closed on June 30, 1906, all of the existing deficit was wiped out and the new year begun with a larger invested surplus than the association has ever had and with a small actual balance over all liabilities.

The five directors whose terms expire this year are A. P. Langtry, of the Springfield, (Mass.), Union, Harvey W. Scott, of the Portland Oregonian, Thomas G. Rapier, of the New Orleans Picayune, Victor F. Lawson, of the Chicago News, and Herman Ridder, of the New York Staats-Zeitung, all were re-elected with the exception of A. P. Langtry, who announced that he could not serve, and his place was filled by Gen. Charles H. Taylor, of the Boston Globe.

Late reports show that The Associated Press has 760 members, who are served by 14,473 miles

of leased wire by day and 19,844 miles by night. The annual revenues, derived from assessments on the members exceed \$2,200,000 and the daily number of words sent to the principal newspapers is over 50,000, equal to about thirty-five ordinary newspaper columns.

The directors who were elected for a term of three years were: Victor F. Lawson, of the Chicago Daily News; Herman Ridder, of the New Yorker Staats-Zeitung; Thomas G. Rapier, of the New Orleans Picayune; Harvey W. Scott, of the Portland Oregonian, and General Charles H. Taylor, of the Boston Globe. The new board of directors organized by electing Frank B. Noyes, of the Chicago Record-Herald, president; Charles Hopkins, of the Hartford Courant, vice-president; Rufus N. Rhodes, of the Birmingham News, second vice-president; Melville E. Stone, secretary, and Charles S. Diehl, assistant secretary.

Melville E. Stone was again chosen general manager at New York, and Col. Charles S. Diehl as assistant general manager, with headquarters at Chicago.

The Final Postal Test of Transmitting Instruments.

The second and final test of telegraph transmitting devices instituted by the Postal Telegraph-Cable Company, took place in the general operating room of that company at 253 Broadway, New York, on Sunday afternoon, September 23. The tests were conducted under the auspices of Jesse Hargrave, assistant electrical engineer, and F. E. d'Humy, electrician of the Eastern division. Traffic Manager Minor M. Davis was also present. Among those present who were interested in the test were W. O. Coffe, of Cleveland, O., the inventor of the Meco-graph, who did the transmitting, and C. P. West and D. A. Mahoney, of New York; George W. Conkling and his brother, H. C. Conkling, represented the Auto-Dot interests; Horace G. Martin championed his own instruments, the Vibroplex and Autoplex; W. S. Clark, of Chicago, operated the Simplex. O. T. Anderson, of Chicago, the selling agent, being also on hand, while James Uncles handled the Yetman transmitter. The hand transmitting on the part of the Postal Company was executed by Mr. F. Lass. The machines were skilfully handled and the signals appeared to compare favorably with hand signals, but examination of the recorder tape, which will clearly show the differences, has not yet been completed.

This test was made over a wire extending from New York to Chicago and return, a distance of 2,010 miles. The circuit was repeated at Meadville, Pa., both going and returning, and also at Chicago. The five messages that were transmitted as the test by each interest were selected on account of their difficult cipher words.

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The New Western Union Chief Operator at Denver.

Mr. G. Frank Coit, until recently assistant chief operator of the Western Union Telegraph Company at Indianapolis, Ind., has been promoted to be chief operator of the same interests at Denver, Colo. Mr. Coit was born at Columbus, O., in 1864, at which point he entered the employ of the telegraph in 1877. Becoming an operator he continued at Columbus for a number of years, thence going to Toledo in 1886 where



G. F. COIT.

Chief operator, Western Union Telegraph Company, Denver, Colo.

he served The United Press as an operator for a year. His next move was to Indianapolis, Ind., there entering the employ of the Western Union Telegraph Company. From the position of operator he soon attained that of traffic chief, then wire chief, in 1900 being appointed assistant chief operator, the place he has just left to accept his present appointment at Denver, Mr. Coit, who is an accomplished electrician, was always regarded as a first class operator. He is a close observer and student, and his advancement has been fairly earned.

To Romanize Chinese Names.

The Western Union Telegraph Company has received a communication from Chow Wan-Pang, director of the Imperial Chinese Telegraphs, dated Shanghai, Aug. 1. It says: "The development of telegraphs and posts in the Empire of China has necessitated that a uniform system of romanization of Chinese city names should be adopted, and for this purpose a special committee was appointed. This committee consisted of Toatai Chow Wan-Pang and Mr. F. N. Dresing of the Imperial Telegraphs, Messrs. H. B. Morse and W. Bright of the Imperial Customs, Count de Galemberg and Mr. H. W. Brazier of the Imperial Posts, and Mr. W. F. Tyler, Imperial Chinese Coast Inspector."

As a result of the work of the committee, it is stated, a uniform spelling system has been adopt-

ed, and will in future be applied to all Chinese names. The names of several Chinese telegraph stations have already been altered. The uniform romanization of the names of Chinese towns will be a great convenience to Americans and other foreigners who have business relations with the Celestial Empire. The Chinese Government adopted the telegraph system before it allowed the building of railroads because the officials recognized in it an important factor for the maintenance of order in the interior of the country. To-day there are about 4,000 miles of railroad and 15,000 miles of telegraphs in the 4,277,170 square miles of territory which comprise the Chinese Empire. All telegraph forms are inscribed in Chinese and English.

The Chinese officials are as particular in their telegrams as they are in every other line of their business. Foreigners make mistakes in the names of towns and provinces and then throw the blame, if the message goes astray, upon the officials. Owing to the similarity of names it is easy for anyone but a Chinese to make an error which may send a telegram chasing all over the country before it arrives at its proper destination. It is, however, certain to arrive finally, even if a year is occupied in the journey. The Chinese are very painstaking and methodical, and time with them is usually no object. Names of towns like Chang-Lo, Chang-Loh, Ho-Chow, Hoh-Chow, Ngan-Tin, Ngan-Ting, Ning-Yang and Ning-Yuan are specimens of what has to be contended with in China. Hong Kong business men who have an extensive correspondence with merchants in the interior frequently sit for hours in the billiard room of the Hong Kong Hotel trying to think out whether the name of a town to which they wish to wire should read "Ling-tin-Ling" or "Ting-yin-Ting."

Meeting of the Units Standardization Commission Postponed.

The meeting of the international commission on Electrical Units and Standards, which was to have been held in London in October, has been postponed for one year. This delay will permit of more leisurely and thorough investigation of the questions in relation to which the commission must have very definite information, such as the adoption of specifications for the silver coulometer and the Weston normal cell. By October, 1907, the international gathering should be reasonably sure of having satisfactory data before it. Prof. H. S. Carhart of the University of Michigan, the official delegate from the United States to the forthcoming conference, with his colleague at the university, Professor Patterson, is engaged at present in making a determination of the electromotive force of the Weston cell by means of his absolute electro-dynamometer.—Western Electrician.

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NEW YORK, OCTOBER 1, 1906.

The Book Department of Telegraph Age, always a prominent and carefully conducted feature of this journal, has in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished, promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientele. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The Old Timers and Military Telegraphers at Washington.

It is pleasant to contemplate the coming together in social reunion of the Old Time Telegraphers' and Historical Association and of the United States Military Telegraph Corps, at Washington on the 9, 10 and 11 of this month, for it assembles a band of telegraphic brethren closely cemented in bonds of long time unity and sympathy. Nowhere else in the world does the spirit of telegraph fraternity prevail to the same extent as in America, and these annual meetings serve to keep alive and strengthen this delightfully distinctive feeling. Here will meet telegraphers who have served commercial or railroad interests, one or the other, or both, together with the devoted band, whose numbers

are now rapidly lessening, who with heroic fortitude went to the support of the government to work its telegraph wires, at the time of the Civil War. Included in the membership of these two organizations are many who no longer send the dots and dashes, and to whom the sounder is but a memory. Abandoning the key they have gone into other lines of business, and many are classed among the successful men of the day. Their loyalty to and affection for the avocation that first claimed their attention is sufficiently attested by their continued connection with the associations named, both in spirit and in fact, and by their frequent presence at these annual gatherings. It matters not what may be the particular form of employment one has encountered in the telegraphic field, the word "telegraph" is talismanic in its meaning, the "open sesame" that admits each comer to the fraternal heart.

The story of the reunion printed elsewhere in this issue, particularly that portion embraced within the illustrated sketches of both active and former telegraphers, which appear in great numbers, presents in graphic measure the history of the lives of many, all of whom, scarcely without exception, are members of the two allied organizations named. The perusal will be followed with interest and the lesson to be adduced therefrom shows that success in life is vouchsafed to the intelligent, honest, studious and ambitious man possessed with capacity and progressive ideas. It is especially gratifying to note that so many former telegraphers have achieved large and distinguished success in other fields of business endeavor.

TELEGRAPH AGE bids the telegraphers welcome to Washington, and congratulates President Young and his host of zealous co-workers in preparing for the reception of these guests; in the vast amount of intelligent and well directed efforts that have been made to insure a successful outcome of the twenty-sixth annual convention.

Even Our Advertisements Are Quoted.

A telegram from Guthrie, Okla., published in the Wichita, Kansas, Eagle, expresses the evident good feeling the people of Oklahoma entertain for the Postal Telegraph-Cable Company of Texas, which is doing so much to call attention to the desirability of the new state as a place of residence and for business enterprise:

"The Postal Telegraph-Cable Company of Texas is carrying a quarter-page advertisement in TELEGRAPH AGE that will be appreciated by the residents of this state. So unusual is this for a public service corporation that it is deemed worthy of special commendatory mention in these columns. It is a genuine 'boost,' as will be observed in the reproduction following:

"In casting about for a place to make your future home, do not overlook the Oklahoma Territory, but come and see for yourself that it offers

more to the home-seeker than any other part of the United States. Seeing is believing. The climate of Oklahoma is fine, the prevailing breeze from the southwest in summer making even the warmest August days pleasant. The rainfall over this territory is well distributed, making agriculture the principal occupation of the people, the most satisfactory and lucrative. Corn and wheat are more widely grown than anything else, though cotton, a very fine staple of which can be grown there, is gaining in favor. Fruits of all kinds grow in abundance, a failure of the peach crop being unknown. Railroads, telegraph and telephone lines are all to be found well equipped to accommodate the people in disposing of their products, the Postal Telegraph-Cable Company of Texas having up-to-date offices in all the principal towns."

The Work Accomplished by The Associated Press.

The Associated Press is to be congratulated on the handsome showing of the condition of their organization made evident by the statement submitted at its late meeting held in New York. The deficit entailed by the extraordinary expenses incidental to the Russo-Japanese War, has not only been overcome, but the earnings show a commendable balance to the credit of the association.

The eruption of Vesuvius was handled with skill, courage and success. In Russia, just now the storm-center of the world, Associated Press correspondents are doing efficient and heroic work.

Too much praise cannot be bestowed upon the skilful guidance of Melville E. Stone, the general manager of The Associated Press, for this encouraging state of affairs.

The Postal Company at Chicago and Its Operators.

The telegraph operators in Chicago, employed by the Postal Telegraph-Cable Company in that city, presented to the company on August 10, through E. J. Nally, its general superintendent, a list of requests, made up of thirty-two separate paragraphs, covering a wide range of subjects and affecting almost every detail of the telegraph service. Mr. Nally personally presented the requests to the executive officers in New York. The matter received due consideration, and a reply, dated September 10, was recently returned to Mr. Nally. This says in part:

Referring to the communication of August 10 from certain of our employees, we have to say to those who have signed it, and to all those interested in the subject, that our company has not heretofore thought it wise to formulate a fixed set of rules and regulations governing every detail of the conduct of its business, chiefly for the reason that the conditions affecting our service are so different in different localities, that entire uniformity of action is deemed impracticable. Many of the

suggestions made in the communication are in accordance with the practice already prevailing, and we may be glad to adopt others of them as circumstances may develop to render it just and wise to do so.

The Postal company has diligently sought, from its earliest organization, to deal equitably in every way with its employees of every class, and has received hearty commendation from many of them for its considerate treatment, in the matter of promotions in place and pay; of its recognition of individual opinion and action and in caring for their comfort and well-being in many ways. Its managers have not expected that such consideration could result so unjustly as to foster the building up of an organization designed, through combination, to compel the company to practically turn over the management of its business and affairs to its employees, and yet that is practically what the communication in question aims to do. Of course, nothing of that kind can be submitted to, whatever the result may be to the company.

Here follows the articles of complaint, with the answers of the company attached thereto.

The communication to Mr. Nally, which is signed by William H. Baker, vice-president and general manager of the Postal Telegraph-Cable Company, concludes as follows:

Turning now to the general request to fix minimum salaries for stated classes of service, and to increase a large number of them, as set forth in articles xxix and xxx, those requests cannot be granted. Already salaries have been increased in a great number of cases from time to time and many others will be increased as individual merit may justify. Individual merit is sure to be recognized, and every effort will be made to do full justice to employees, while at the same time protecting the company from undertaking to bear burdens which would be unjust to its owners, whose success in the maintenance of our business is essential to the continued welfare of all employees.

The Postal company has succeeded in building up, during the past twenty-one years, a physical property and a well-ordered system, which have been a great benefit to the general public, to the commerce of this country, and especially to all classes of telegraph employees. It has striven to act upon business-like principles, in every feature of its relations with the public, and its own officers and employees of every class. Its management has been ever ready to correct any injustice or mistaken action that has been shown or discovered, and will continue to do so, but full compliance with the requests now submitted would be so subversive of good order, discipline and equity, that we have no recourse but to assure you that it cannot be consented to.

This reply did not prove to be acceptable to the complainants, and steps were immediately taken to call a meeting of the operators to consider the situation. The meeting occurred on Sunday, September 23, with the result that the entire subject was referred to the general executive board.

The testimony of progressive operators is that **TELEGRAPH AGE** is so thoroughly comprehensive in character as to make it absolutely indispensable to those who would keep informed. Its technical articles are of high practical value. Write for a free sample copy.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

The Social Atmosphere of the Wires.

L. C. Hall, a well-known telegrapher of Norfolk, Va., in a magazine article, has this to say in the introduction of his interesting subject:

"Fancy an atmosphere wherein names and faces count for nothing in the making of friendships—wherein people are known to each other only by their manner of stringing together their dots and dashes; wherein personality is insensibly communicated by the feel of the wire; fancy missing a dead friend's 'Morse' as you would a dead friend's voice, being distressed by the absence of a metallic clicking made in a certain fashion as you would be by the absence of a recognized personal manner.

"Indeed, there is something so strange as to seem almost uncanny about the relations that spring up in the atmosphere of the wires. By such relations I do not mean the ties formed between persons working together in a given office. I refer rather to the intercourse that goes on over the wires between people who, though widely separated in a physical sense, are yet brought into closest touch and sympathy by the pulsations of an electric current.

"In a great telegraph office two men may work side by side for years and never become more than passing acquaintances. In much the same way that people living in flats are ignorant of the lives and characters, even the names, it may be, of those living above and below them, one operator might work alongside another for months and still have no idea of the kind of man his co-worker is.

"But it is not so with the men and women on his 'circuit'—the wire connecting two cities with perhaps many intervening stations, which he operates daily. He may not know the names of his wire-associates, it is true; still, from their manner of working—their 'Morse'—their transmission—as it is variously termed, he soon forms very distinct impressions of their personalities.

"One's 'Morse,' as is well known, is as individual as his face, or voice, or personal manner. Ordinarily it is no less difficult to mimic a sender's dots and dashes than it would be to assume temporarily his facial likeness. As a matter of fact, his manner of stringing together his dots and dashes is to a telegrapher a medium of expression than which there is none more subtle and convincing. Just how the individuality of a sender can be imparted to signals so simple is not easy to make clear to the uninitiated. The secret lies perhaps in the slight variations in the length of the elements of the signals, and in the quick or dwelling touch given certain combinations of letters. At any rate, 'expression' in the telegraphese is as well recognized a quality as expression in music; and individuality in the 'Morse' is fully as pronounced.

"All this once understood, it can readily be judged that a man puts more of his real self into his telegraphese than into any other form of character expression. In his speech, for exam-

ple, or his personal manner toward another, he unconsciously conforms to certain conventions, it matters not what his real feelings may be. But over the wire there is no pretending to what one does not feel. If the sender be in good spirits his 'Morse' is apt to be buoyant and snappy; if he be depressed the dots and dashes flow sluggishly; if all be serene with him the signals ripple along in rhythmic cadences that tell the truth in a way not to be mistaken.

"Naturally, then, in working together, day after day, telegraphers become much more closely interested in each other by wire than if they simply worked side by side in a busy office where unnecessary talk is always discouraged. And, insensibly, this interest begets social ties, unlike anything else in the range of community of feeling; ties that are often as binding as those that spring from personal association."

How Editors Learn From Their Readers.

Newspaper men are educated in no small degree by the thousands of minds which react upon the facts alleged and the opinions put forward to the world. Criticisms, whether wise or foolish, teach us at least much about the constitution of the general mind. Many of them are corrective and intelligent, some remarkable for their naiveté. Among the simpler ones the type recurs.

Every time, for example, that a book is praised a crop of responses arrive, asking where it can be procured, or requesting us to purchase it and mail it to the inquirer. Sometimes fifty cents is enclosed, with a promise of more if needed. Such requests come, as often as not, from places large enough to contain book-shops. Another favorite device is to cite an opinion or statement of ours, without giving the date or context, and ask for some special information about it.

Such bits of ingenuousness, however, vanish in an editor's general impression of his correspondence, which stands to him for one of the most fertile channels of instruction, of first-hand and varied experience, that have ever enriched his passage through this vale.—Collier's Weekly.

Patent Office Delays.

It is alleged, remarks the Electrical World, that although making a handsome surplus the United States Patent Office is far behind in its work, because of the inadequate staff. In January last there were 17,353 cases awaiting action. The number has been steadily growing, and a month ago reached 23,523. In January the average time for getting a patent through was three months. The time now is eleven months. At the present ratio of falling behind, unless an increase be made in the staff of the Patent Office, it will require years to get a patent issued.

Sample copies of TELEGRAPH AGE will be sent free to all intending subscribers.

Forty-Niners of the Telegraph.

The following list embraces the names of the oldest living members of the telegraph profession; they include so far as known those who entered the service during the forties:

Name	When entered the service.	Where entered the service.
Adams, Frank.....	1849..	Akron, O.
Allen, George E.....	1847..	Utica, N. Y.
Ayres, George B.....	1846..	Harrisburg, Pa.
Balch, G. W.....	1848..	Detroit.
Barr, M. W.....	1847..	Wheeling, W. Va.
Benedict, G. G.....	1849..	New York.
Berry, Stephen.....	1846..	Boston
Bethune, N. W.....	1847..	Montreal
Booth, N. M.....	1849..	Louisville, Ky.
Brenner, J. A.....	1849..	Washington
Brigham, George F....	1848..	Fredonia, N. Y.
Brigham, Henry H....	1849..	Warren, Pa.
Bright, Louis A.....	1849..	Pottsville, Pa.
Brownson, W. G.....	1849..	Poughkeepsie, N.Y.
Buell, Madison.....	1847..	Buffalo, N. Y.
Carnegie, Andrew.....	1848..	Pittsburg, Pa.
Clark, James J.....	1845..	Philadelphia
Clark, William H....	1849..	Frankfort, Ky.
Cleveland, Uriah.....	1847..	Toledo, O.
Cobb, Emory.....	1848..	Fredonia, N. Y.
Compton, J.....	1848..	Wheeling, W. Va.
Cutler, Charles S....	1849..	Buffalo, N. Y.
David, T. B. A.....	1849..	Pittsburg, Pa.
Daugherty, A. D.....	1848..	Coldwater, Mich.
Davis, A. G.....	1849..	Poughkeepsie, N.Y.
Dodge, L. C.....	1847..	Burlington, Vt.
Dunham, James.....	1847..	Poughkeepsie, N.Y.
Dwight, H. P.....	1847..	Montreal
Easson, R. F.....	1849..	Toronto, Ont.
Eckert, Gen. Thos. T..	1848..	St. Clairsville, O.
Farnsworth, George...	1849..	Boston
Frey, George H., Sr...	1849..	Springfield, O.
Gentry, W. D., Dr....	1848..	Hopkinsville, Ky.
Greene, Joseph S.....	1846..	Philadelphia
Guthridge, J. F.....	1849..	Attica, Ind.
Haskins, Charles H...	1846..	Buffalo, N. Y.
Haviland, James D....	1847..	Detroit
Hepburn, H. C.....	1845..	Philadelphia
Homans, Benjamin....	1848..	Baltimore
Hoyt, Samuel.....	1848..	Milan, O.
Hucker, Nathaniel...	1847..	Buffalo, N. Y.
Hunt, Thomas.....	1849..	Morrow, O.
Kissock, David.....	1847..	St. Catharines, Ont.
Larcombe, J. H.....	1847..	Philadelphia
Lasscell, W. B.....	1849..	
Louis, L. A.....	1848..	Louisville, Ky.
Lumbard, Julius G....	1847..	Ashtabula, O.
Matthews, Charles P...	1849..	Columbus, O.
Melbourne, W. A.....	1848..	Bardstown, Ky.
Merrihew, James.....	1849..	Wilmington, Del.
Pitcairn, Robert.....	1849..	Pittsburg, Pa.
Porter, E. P.....	1846..	Geneva, N. Y.
Reed, Henry A.....	1849..	Carmel, N. Y.
Reed, Douglas.....	1847..	Sandusky, O.
Ryan, Reuben H.....	1848..	Milan, O.

Stone, John D.....	1846..	Rochester, N. Y.
Sutherland, John A....	1849..	Buffalo, N. Y.
Talcott, A. B.....	1849..	Boston
Titcomb, H. B.....	1848..	Memphis, Tenn.
Tomlinson, E. M.....	1846..	Hartford, Conn.
Townsend, John A....	1849..	Akron, O.
Tree, J. B.....	1847..	Washington
Tubbs, F. H.....	1848..	Milan, O.
Tyler, Artemus E.....	1848..	Erie, Pa.
Van Duzer, A. M.....	1849..	Fredonia, N. Y.
Ward, Henry H.....	1848..	Springfield, Mass.
Weller, Alfred.....	1847..	Marshall, Mich.
Williams, George T...	1849..	Sinclairville, N. Y.
Wood, Orrin S.....	1844..	Washington
Wood, Otis E.....	1846..	Buffalo, N. Y.
Worl, James N.....	1848..	Philadelphia
Worl, W. S.....	1849..	Philadelphia
Wright, E. P.....	1849..	Geneva, N. Y.

Among the Forty-Niners of the Telegraph who died during the year were: Martin Barth. William B. Clum. Benjamin H. Dewey, S. H. Kauffman and Robert Newell.

Mr. Hill's Pessimism.

Mr. James J. Hill, whose great executive ability is shown in the operation of one of the trans-continental railways, and who is looked upon as a power in the transportation world, devotes some study to other things, says an exchange, and not only does he discuss economics of the present, but he forecasts dire results in the future, when we become a nation overrun with people, so crowded that the fruits of the earth, the minerals and the forests will cease to be produced in sufficient quantity to satisfy those who must needs live, labor and enjoy comforts. Mr. Hill says:

Within forty-four years we shall have to meet the wants of more than 200,000,000 people. In less than twenty years from this moment the United States will have 130,000,000 people. Where are these people, not of some dim, distant age, but of this very generation now growing to manhood, to be employed and how supported? Our coal, which is substantially our only fuel, will be surely exhausted in 100 years, and in fifty years, when our population shall have reached the 200,000,000 mark, our best and most convenient coal will have been so far consumed that the remainder can only be applied to present uses at an enhanced cost, which will probably compel the entire rearrangement of industries and revolutionize the common lot and common life.

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of TELEGRAPH AGE, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

Orders for books on telegraphy, wireless telegraphy, telephony, all electrical subjects, and for cable codes, will be filled by TELEGRAPH AGE on the day of receipt

You can't afford to be without TELEGRAPH AGE; \$1.50 a year.

Military Telegraphers.

The following is a complete list of the living United States Military Telegraphers so far as known:

Anderson, Joseph
Armstrong, E. L.
Armstrong, S. T.
Arnott, Thomas
Ash, William M.
Atwell, J. W.
Barton, S. E.
Barwick, Thomas
Bates, D. H.
Baxter, George W.
Bender, R. W.
Benedict, C. H.
Bliss, A. H.
Bohle, R. H.
Boyd, J. W.
Boyle, E. C.
Brennaman, A. T.
Bowerman, H.
Brooks, J. N.
Bruch, Adam
Bruner, P.
Brush, Samuel T.
Buell, Madison
Burch, C. B.
Burnett, George A.
Bush, E. F.
Chandler, Col. A. B.
Chandler, C. E.
Childs, A. F.
Clark, J. B.
Clowry, Col. R. C.
Cochran, C. P.
Cole, George
Cruise, J. D.
Culbertson, C.
Darlington, H. P.
David, Capt. T. B. A.
Davis, Samuel
Dealy, W. J.
De Bree, N.
Dennis, L. B.
Dixon, J. R.
Dougherty, C.
Dougherty, A. D.
Douglass, Charles
Doyle, P. C.
Duncan, F. H.
Eckert, Gen. T. T.
Eitemiller, George M.
Elliot, R. H.
Evans, Frank H.
Farnham, G. M.
Ferris, D. V.
Fish, E. G.
Fitch, D. H.
Flagg, J. A.
Freeland, J. W.
Fonda, T. H.
Fuller, J. A.

Maize, I. D.
Martin, H. S.
Martin, R. W.
Mason, J. Q.
Matlock, H. H.
Maynard, George C.
McCleverty, J. D.
McClure, James P.
McGrain, J. P.
McKelvey, A. T.
McKenna, J. A.
McMichael, I.
McMurtry, B.
McReynolds, C. W.
Meagher, J. R.
Mixer, Charles H.
Montayne, C. D.
Moore, C. W.
Moreland, T. E.
Morgan, J. B.
Morrison, Thomas
Murray, P. J.
Naile, G. W.
Newton, E. C.
Nichols, A. M.
Nichols, J. H.
Nohe, A. W.
Norris, J. B.
Nunan, P. H.
Nye, J. M.
O'Brien, Dr. J. E.
O'Brien, Richard
Orton, A. W.
Palmer, C. H.
Parsons, James K.
Parsons, J. W.
Peel, E.
Perdue, L. Ford
Pettit, J. E.
Phelps, Ransom
Plum, H. W.
Plum, W. R.
Pond, Chester H.
Powers, Richard
Prichard, A. Pinkerton
Railton, G. W.
Rawlins, T. E.
Reese, Samuel
Robinson, B. L.
Robinson, J. H.
Robinson, Merritt F.
Robinson, S. L.
Rose, L. A.
Rumsey, S. B.
Ryan, Crosby J.
Sanburn, F. A. H.
Safford, A. G.
Schnell, Joseph, Jr.
Schnell, Thaddeus

Furr, Robert
Gard, D. H.
Geiger, J. M.
Gentry, W. D.
Gilmore, Col. J. R.
Glascott, W. H.
Goalding, George J.
Greene, E. C.
Griswold, M. E.
Gross, Col. W. L.
Gulick, C. W.
Guthridge, J. F.
Hallam, Isaac W.
Hammond, C. D.
Hammond, C. W.
Hancock, A. G.
Hansen, Joseph
Hatton, O. C.
Henderson, George
Homan, Charles A.
Hoover, R. B.
Hotchkiss, Z. P.
Hull, A. K. V.
Hull, H. P.
Humes, W. S.
Huyck, Maynard
Ingram, S. E.
Ives, W. L.
Jaques, C. W.
Kanode, A. H.
Kerner, M. H.
King, Thomas M.
Kettles, William E.
Knapp, S. B.
Knittle, Joseph
Korty, L. H.
Laird, T. A.
Lewis, W. T.
Lonergan, John
Long, F. C.
Ludwig, D. J.
Ludwig, J. F.

Sheldon, W. A.
Sheldon, T. B.
Shepard, O. M.
Sherman, H. C.
Sholes, C. G.
Showerman, I. C.
Shuman, W. A.
Smith, J. Elliott
Snow, H. N.
Spencer, H. B.
Spencer, J. M.
Sprague, H. C.
Stillman, George
Strubbe, W. G.
Stumm, F. A.
Talbot, R. M.
Thode, C. F.
Tinker, Charles A.
Torrance, J. A.
Townsend, N. S.
Trowbridge, H. R.
Vincent, H. C.
Voltz, J. D.
Von Eye, E.
Ward, Edward T.
Warner, O. L.
Weir, Col. L. C.
Webb, J. G.
Whelpley, C. L.
White, W. N.
Williams, D. A.
Williams, J. S.
Wilson, Col. Wm B.
Wilson, Ellis J.
Winder, A.
Wintrup, J.
Wolff, C. C.
Woodring, W. H.
Woodward, B. F.
Woodward, W. R.
Wood, William

Among the members of the United States Military Telegraph Corps who died during the year past were: Martin Barth, Cornelius Dwyer, J. D. Flynn, Matthew Gordon, W. S. Logue, E. Rosewater and L. A. Somers.

United States Circuit Judge F. E. Baker, at Goshen, Indiana, on August 31, rendered his decision in the Western Union Telegraph Company vs. the State Board of Tax Commissioners, denying the temporary injunction. At its recent sitting the tax commissioners fixed the assessment against the telegraph company at \$69 a mile. The company objected to this amount, contending that this was an excessive assessment. Suit was brought for an injunction, insisting that \$32 a mile would be ample valuation of the company's property per mile in Indiana.

Reunion of the Old Time Telegraphers' and Historical Association and the Society of the United States Military Telegraph Corps.

The Old Time Telegraphers' and Historical Association, jointly, as is the custom, with the Society of the United States Military Telegraph Corps, will meet in Washington, D. C., for their twenty-sixth annual reunion on the days of Tuesday, Wednesday and Thursday, October 9, 10 and 11. The twentyfifth (or silver anniversary, was celebrated last year in New York, and now that the days of youthfulness having past these closely allied associations, in which long memories are gathering, are pursuing their way with the dignity and wholesomeness becoming to more mature years.

It is particularly appropriate that the coming meeting should be held in Washington, the home of the wonderful art which has done so much to civilize the world and bring nations within closer touch. Washington was the scene of the operations of the first practical telegraph ever built and operated, and where Professor Morse planned and worked and experimented, until at last the wonderful achievement was recorded in the simple message, "What hath God wrought."

The headquarters of the two associations will be at the Arlington Hotel, Lafayette Square, near the White House, and this hostelry will be the scene of more reunions than are contemplated in the programme when those who have worked over miles of wire come together face to face, many old time wire friends meeting for the first time in person though familiar and well acquainted with each other while separated by immense distances.

No place in the United States is so close to the telegraph as the city of Washington. It is the right arm of the government in peace as it was in war, and it would be a difficult matter to carry on the government without its aid. Indeed, when the telegraph fails, for any reason, business of all kinds is practically at a standstill.

The local committees in anticipation of the coming of the telegraphers, have been indefatigable in making arrangements providing for the reception, entertainment and pleasure of their visitors. A splendid programme has been worked out. This is as follows:

A business meeting of the Old Time Telegraphers' and Historical Association will be held at ten o'clock, at the Arlington Hotel, on the morning of Tuesday, October 9. This will be followed by a business meeting, at the same place, at eleven o'clock, of the Society of the United States Military Telegraph Corps. At three o'clock in the afternoon, a visit to Arlington, Va., and Fort Myer will be made. There will be a cavalry drill at the fort and in the evening a theatre party is proposed.

A most enjoyable feature will be the reception to the telegraphers to be accorded by President Roosevelt at the White House. This will occur

at twelve o'clock, noon, on Wednesday, October 10, guests assembling at eleven o'clock. At one o'clock a trip to Mount Vernon will be made. In the evening a visit is planned to the Congressional Library.

On Thursday, October 11, the purpose is to begin the day at ten o'clock by a sight-seeing trip about the city in automobiles, while the afternoon will be devoted to inspecting the Corcoran Art Gallery, the Washington Monument, the National Museum, and possibly the Capitol. In the evening the concluding feature of the reunion will occur, namely, that of the banquet at the Arlington Hotel. This will be a subscription dinner and a charge of \$2 will be made for each person attending the affair. At this function a patriotic song will, it is expected, be sung, the words and music of which were written especially for the occasion, by Marion H. Kerner, of New York, and entitled 'Twas a Boy That Swung the Key. Here are the words:

'Twas a Boy, THAT SWUNG THE KEY.

When our country was in danger of destruction,
And Fathers, Sons and Brothers stood as foes.
When North and South were threatened with
disruption,

And war clouds thickened fast as they arose,
A speedy call "To Arms" aroused the nation,
Whose loyal sons would save her unity,
When our President sent forth his proclamation,
'Twas a Boy, a loyal Boy, that swung the key.

Chorus.

'Twas a Boy, a loyal Boy, that swung the key,
That led a nation safe to victory,
Let his mem'ry never perish,
May a grateful country cherish,
The Boy, the loyal Boy that swung the key.
While Statesmen gathered close in contemplation,
Our Soldiers in their tented camps prepared,
To sacrifice their lives to save the Nation,
If foes its dissolution ever dared,
But when, from Sumter came the declaration,
That war alone shall solve our destiny,
The thrilling news was flashed to all the Nation,
By a Boy, a loyal Boy, that swung the key.

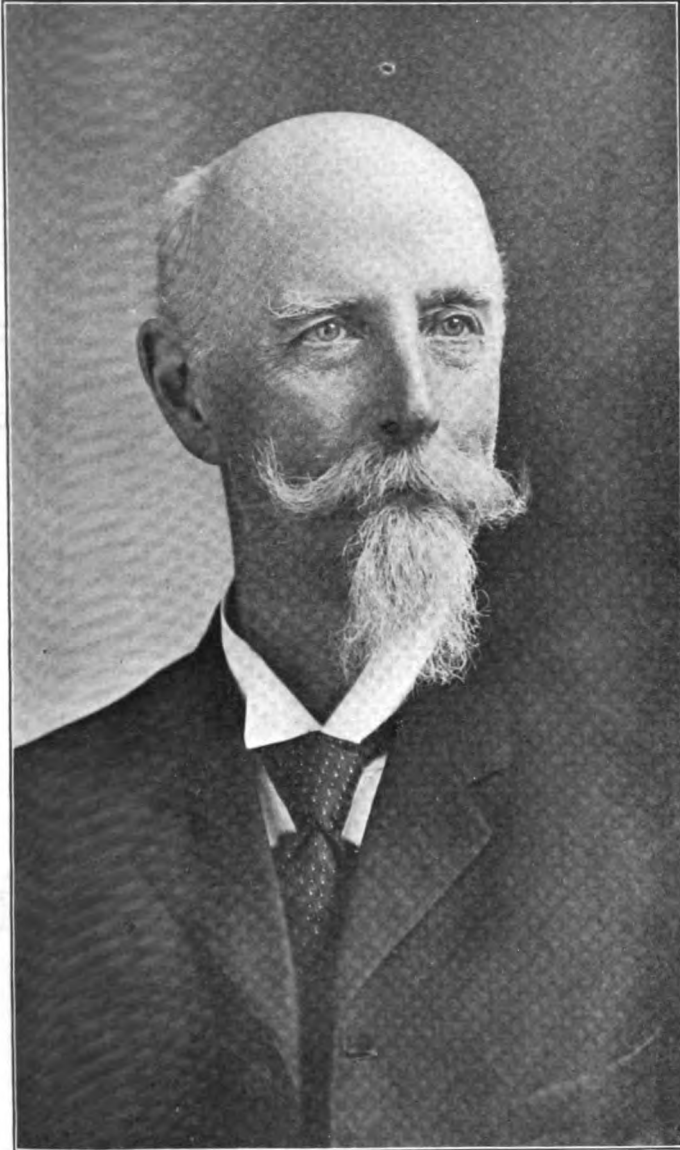
From Appomattox came another declaration,
"Secession shall forever be buried be,"
The Union is cemented as a Nation,
The hand of Grant is nobly grasped by Lee,
Thank God! the struggle's over and "Old Glory"
Waves proudly over land and o'er the sea,
'Twas a Boy that gave the world the joyful story,
'Twas a Boy, a loyal Boy, that swung the key.

While the societies named carry on their lists of membership many who are active still in the telegraph service, there are also many who have gone out therefrom but who retain their places on the roll, held thereto because of love of old associations. For a peculiarity of the telegraph business is that throughout life despite all changes of occupation, it successfully hold the affections of its one time followers. To these societies be-

long many prominent men of this country, embracing such names as Andrew Carnegie, Thomas A. Edison, Col. R. C. Clowry, president and general manager of the Western Union Telegraph Company; General Thomas T. Eckert, who was Assistant Secretary of War in the days of President Lincoln and who had much to do with perfecting the military telegraph at that time; Clarence H. Mackay, president of the Postal Tele-

water, editor of the Omaha "Bee", a member of the Military Telegraph Corps, and chairman of the executive committee of the society.

Mr. William H. Young, of Washington, president of the Old Timers, will probably bring up for consideration at the business meeting of the association a proposition providing that the officers and executive committee be elected to serve for three years instead of one as now. He be-



WILLIAM H. YOUNG, WASHINGTON, D. C.
President Old Time Telegraphers' and Historical Association.

graph-Cable Company; D. H. Bates, former president of the Baltimore and Ohio Telegraph Company; L. C. Weir, president of the Adams Express Company and an innumerable host of others.

A number of deaths have occurred since the meeting of a year ago, one of the most distinguished to pass away being Edward Rose-



CHARLES P. ADAMS, WASHINGTON, D. C.
Vice-Pres. Old Time Telegraphers' and Historical Association.



G. W. RIBBLE, WASHINGTON, D. C.
Vice-Pres. Old Time Telegraphers' and Historical Association.

lieves that such an arrangement would confer a greater degree of solidarity upon the association itself, and that its influence would be felt in making it stronger historically and fraternally, and at the same time be the means of securing the diversion of some portion of the funds now spent yearly toward the establishment of a permanent headquarters.

The various committees are made up as follows:

Committee on Finance—Wm. H. McKeldin, chairman; J. J. Mooney, secretary; T. T. Moore, J. B. Austin, J. T. Bresnahan, P. A. Simpson, F. P. Oliver, R. R. Gibbs, W. J. Lee, R. B. Dickey, George L. Diven, C. C. Mothersead, J. R. Brown, Charles H. Mixer, J. B. Mulloy and M. DuPerow.

Committee on Entertainment—J. T. Bresnahan, chairman; T. T. Moore, E. W. Emery, J. W. Collins, R. B. Dickey, H. W. Dowling, J. C. Simpson,

M. DuPerow, J. F. Hahn, P. A. Simpson and Joseph G. Trunnell.

Reception Committee—Hon. P. V. DeGraw, chairman; General James Allen, General H. H. C. Dunwoody, F. A. Munsey, Charles E. Kern, W. B. Wilson, Charles A. Boynton, Colonel B. F. Montgomery, W. T. Bingham, E. L. Keen, Wal-



JAMES B. YEAKLE, BALTIMORE,
Vice-President Old Time Telegraphers' and Historical Association.

J. H. Anderson, Robert H. Prender, John LaGorce, C. O. Pierson, W. H. Rowland, George Coombs, J. P. Gooch, C. E. Ingling, J. A. Rodier, W. H. Potter, J. R. Brown, W. W. Trail, Martin Kain, W. J. Hughes and R. R. Gibbs.

Committee on Hotels—R. G. Callum, chairman; J. P. Gooch, George L. Diven, J. A. O'Keefe,



JOHN C. BARCLAY, NEW YORK,
Member of Executive Committee.

ter C. Allen, Commander E. E. Hayden, U. S. N., A. N. Breckenridge, J. A. Kemp, E. M. Hood, A. G. Davis, M. W. Barr, Joseph B. Tree, Charles Selden, George E. Gilliland, A. H. Kanode, R. W. Bender, E. C. Stewart, Dr. Z. I. Nutt, J. J. Vowles, A. J. Henry, Charles E. Daly, J. F. Riley, William H. Allen, D. F. Brown, N. R. Young, Dr.



JOHN BRANT, NEW YORK,
Secretary and Treasurer Old Time Telegraphers' and Historical Association.

E. W. Emery, J. W. Collins, T. T. Moore, Martin Kain and Charles Mothersead.

Committee on Badges—P. E. Brown, chairman;



CHARLES C. ADAMS, NEW YORK,
Member of Executive Committee.

J. J. Clark, Charles H. Mixer, Wm. E. Peirce, Samuel Perrin, J. F. Connor, A. B. Talcott, Frank G. Adams, D. D. Kennedy, Charles S. King, D. W. Daly, Wm. B. Harvey, cutter, A. J. Lombard.

E. F. Marean, P. L. Parker, Jules Guthridge, E. Cadmus, M. Brick, J. C. Noyes, J. J. Howley, Edward Bradshaw, J. D. Prosser, Martin Kain, J. B. Mulloy, J. R. Hewitt, W. H. Rowland, J. P.

chairman; Mrs. R. G. Callum, Mrs. H. F. Taff, Mrs. J. C. Noyes, Mrs. J. F. Connor, Mrs. E. W. Emery, Mrs. P. E. Brown, Mrs. E. C. LaGorce, Mrs. C. C. Mothersead, Mrs. J. T. Bresnahan,



URIAS J. FRY, MILWAUKEE,
Member of Executive Committee.



HENRY F. TAFF, WASHINGTON, D. C.
Member of Executive Committee.

Gooch and J. G. Trunnell.

Banquet Committee—J. W. Collins, chairman; J. H. Robinson, J. D. Prosser, R. G. Callum and W. H. McKeldin.

Committee on Press and Printing—J. B. Austin, chairman; H. H. Fry, C. S. Albert, J. D.

Mrs. J. D. Prosser, Mrs. J. P. Gooch, Miss E. M. Hall, Miss A. E. Forrester, Miss N. G. Strong, Miss V. G. Merks, Miss K. L. Tucker, Mrs. R. M. Johnson, Mrs. A. G. Guthridge, Miss C. F. Marean, Mrs. J. J. Mooney, Mrs. C. P. Adams, Miss Mamie Young, Miss Blanche Young, Mrs.



G. H. CORSE, OGDEN, UTAH.
Member of Executive Committee.



HON. P. V. DE GRAW, WASHINGTON, D. C.
Member of Executive Committee.

Thompson, J. R. Brown, W. M. Patton, W. J. Costello, T. J. Luckett and Hugh J. Senter.

Ladies' Reception Committee—Mrs. P. V. DeGraw, chairman; Mrs. W. H. McKeldin, vice-

H. W. Dowling, Mrs. C. E. Ingling, Mrs. J. A. Rodier, Mrs. E. W. Smithers, Mrs. J. H. Anderson, Mrs. W. H. Rowland, Mrs. D. W. Daly, Mrs. Maurice Brick, Mrs. N. B. Kelser, Miss K. E. Clopp, Mrs. M. G. Milburn, Miss G. Fitzsimmons, Miss B. M. Barrett, Miss Rose Callan, Mrs.

F. C. Duffy, Miss A. V. Tenly, Miss S. McDuffie, Miss Anita Grosscup and Mrs. J. F. Riley.

Officers of the Old Time Telegraphers' and Historical Association—Wm. H. Young, presi-

Ives, vice-president, New York; J. E. Pettit, secretary and treasurer, Chicago. Executive Committee—A. H. Bliss, W. R. Plum, Chicago; Col. A. B. Chandler, R. B. Hoover, M. H. Kerner,



GEORGE C. MAYNARD, WASHINGTON, D. C.
Member of Executive Committee.

dent, Washington; Charles P. Adams, vice-president, Washington; G. W. Ribble, vice-president, Washington; James B. Yeakle, vice-president, Baltimore; John Brant, secretary and treasurer, New York. Executive Committee—John C. Bar-



ERNEST W. EMERY, WASHINGTON, D. C.
Member of Executive Committee.

clay and Charles C. Adams, New York; U. J. Fry, Milwaukee, Wis.; George H. Corse, Ogden, Utah; Henry F. Taff, P. V. DeGraw, George C. Maynard, Ernest W. Emery and Jesse H. Robinson, Washington, D. C.

Officers of the Society of the United States Military Telegraph Corps—Col. Wm. B. Wilson, president, Holmesburg, Philadelphia; Wm. L.



JESSE H. ROBINSON, WASHINGTON, D. C.
Member of Executive Committee.

New York; George C. Maynard, Washington; I. D. Cruise, Kansas City, Kan.; John Wintrup, Philadelphia.



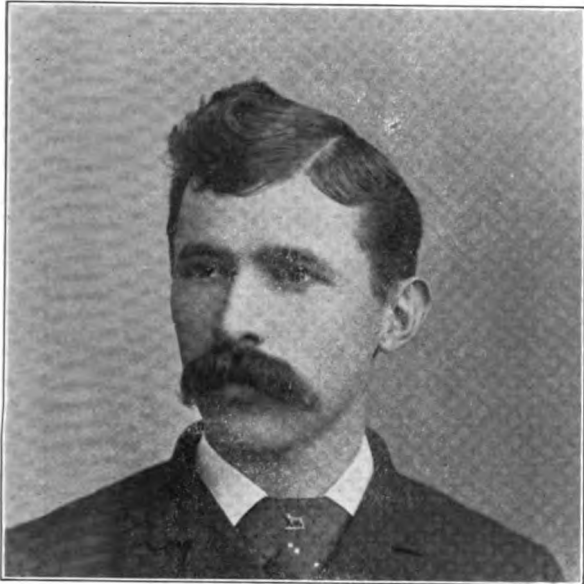
R. G. CALLUM, WASHINGTON, D. C.
Chairman Hotel Committee.

SOMETHING ABOUT WASHINGTON.

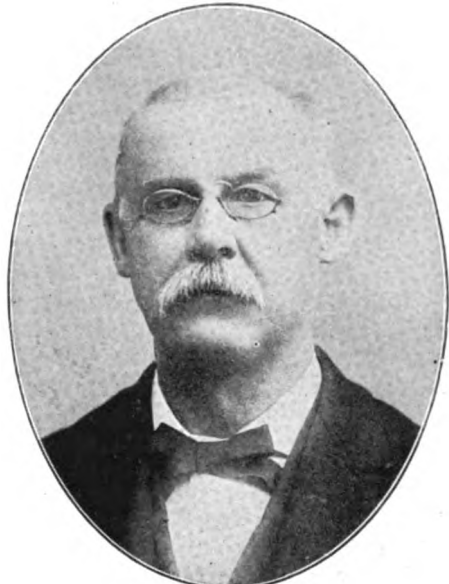
Of Washington, the seat of government, much might be written descriptive of its history, of its beauty and of its importance as the capital city of the nation. Space will permit of but a brief reference to a subject that might well fill columns. Those who are not personally familiar with the city, when visiting it for the first time

will be impressed by its broad and splendidly-paved streets, by its magnificent trees that shade perfectly every residential thoroughfare, and by

mile up Pennsylvania avenue from the capitol, and the numerous other public buildings are scattered widely over the city, and afford supe-



WM. M. McKELDIN, WASHINGTON, D. C.
Chairman Finance Committee.



W. L. IVES, NEW YORK.
Vice-President, Society of the United States Military Telegraph Corps.

the refinement that seems to pervade the very atmosphere. Then the magnificent public buildings will engage the attention of the visitor, the capitol, of course, with its vast dome, towering aloft over 300 feet to the top of the statue of Liberty, easily coming first, for this great struc-

rior examples of architectural construction, many of which may be considered as of individual types. Washington is the home of a large leisure class, of artists and literati. It is also cosmopolitan to a high degree, for its population is not only drawn from all points of the United States, but



COL. W. R. WILSON, PHILADELPHIA.
President, Society of the United States Military Telegraph Corps.



J. E. PETTIT, CHICAGO.
Secretary and Treasurer, Society of the United States Military Telegraph Corps.

ture, 721 feet long, is not surpassed in grandeur of architectural beauty and strength of character by any building in the world. The White House, the home of the President, is distant about a

from every civilized nation as well, for all have their numerous representatives here.

Washington was selected as the site for the federal capital in 1790, the ten miles square orig-

inally contained in the District of Columbia being ceded by the states of Maryland and Virginia. The portion contributed by the latter was in late years retroceded to the state which gave it. The plan of the city is regular and symmetrical and was designed by Major l'Enfant, a Frenchman, and in the recent improvements inaugurated in the city the ideas of its originator have been closely adhered to. It was a wise conception, for in the provision for its future development the element of beauty and attractiveness of detail was carefully thought out. Not only this, but the laying out of the city followed closely a plan that would permit of its easy defense. Radiating from the capitol are three streets, running north, south and east, and known, respectively as North, South and East Capitol. These, together with a line of public parks running west from the capitol, divide the city into quarters known as northwest, northeast, southeast and southwest. The intersection of the streets and avenues have given opportunity for the construction of many small parks of odd shapes and sizes, all contributing to the picturesque charm and healthfulness of the city. While the older portion of the city is built on comparatively low ground, the newer outlying parts and the immediate suburbs, particularly to the northward, are situated delightfully on high grounds.

The location of Washington on the Potomac river, at the head of navigation, is distant 106 miles from Chesapeake Bay. The city is under the immediate control of the United States government, its management being invested in the hands of three commissioners appointed by the President, two resident civilians and one army officer of the corps of engineers. The population of Washington in 1900 was 278,718, since which time its growth has been rapid.

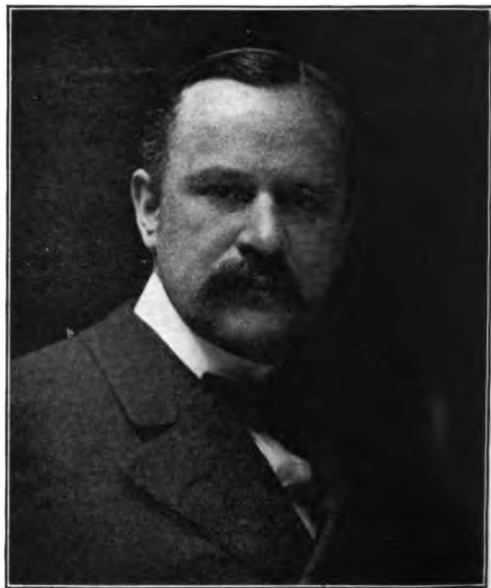
SKETCHES OF SOME OF THE MEMBERS OF THE OLD
TIME TELEGRAPHERS' AND HISTORICAL ASSOCIATION
AND OF THE SOCIETY OF THE UNITED
STATES MILITARY TELEGRAPH CORPS.

The consideration of the personnel of the telegraph is always a subject of interest. When revealed through biographical sketch, giving, briefly though it may be, a record of the lives of many who are still within the ranks, or of those who have stepped therefrom and won success in other avocations, the result is to show in pleasant light and in close juxtaposition the intense personality of the working force of the telegraph, its love for the service and loyalty to employing interests; furnishing a revelation, indeed, of what may be termed the "heart beat" of the business. In many of the sketches that follow a wholesome lesson may be learned of the dignity and power of individual character that has enabled operators possessing opportunities no greater than those held in common with their fellows, to rise above their surroundings, and who have found

success in promotion that has carried them to the higher positions within the gift of the telegraph, or in gaining preferment in business foreign or allied thereto.

GEORGE J. GOULD.

George J. Gould of New York, a vice-president, director and member of the executive committee of the Western Union Telegraph Company, the former position of which he has held since September 10, 1884, is a son of the late Jay Gould,



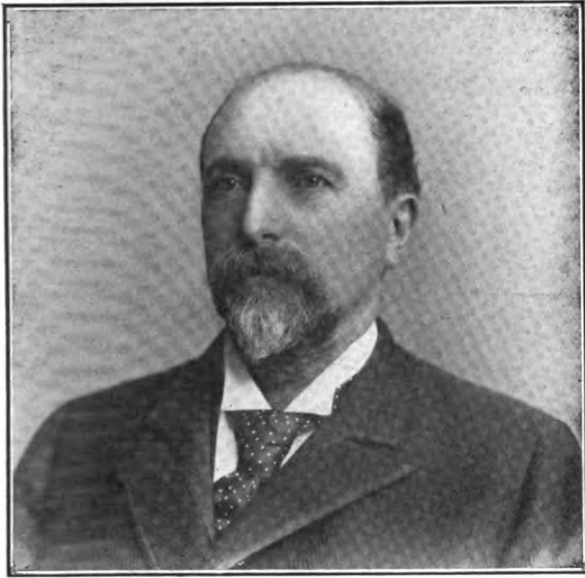
GEORGE J. GOULD.
New York.

and the largest owner of the company's stock, was born in New York, February 6, 1864. It will doubtless surprise many to know that Mr. Gould is a practical telegrapher, yet such is the fact. Although a man interested in vast enterprises, pre-eminently a man of business, he nevertheless possesses a genial nature, is kindly in his manner and characteristically just.

COL. ROBERT C. CLOWRY.

Col. Robert C. Clowry, president and general manager of the Western Union Telegraph Company, New York, is a commanding figure in the telegraphic world. Having risen through all grades of the service from the humble position of messenger in 1852, out at Joliet, Ill., of the Illinois and Mississippi Telegraph Company, to the presidency of the great company he has served for half a century, it would be strange indeed, viewed from the record he has made for conscientious work, if he did not possess a knowledge at once profound and extensive of the property he has been called upon to manage. Since he has attained the presidency of the company

the reserve strength of the man has been made more clearly apparent, for he has shown himself to be a person of keen perceptions, of wide information, and holding a grasp of the detailed affairs of his company of a character not often attained by a chief executive officer of any great corporation. His record in the military telegraph service in the west during the Civil War was highly meritorious, and there it was that he earned his title of colonel. His record of service in the Western Union Telegraph Company shows a swift upward climb, which began in 1866, practically co-equal with the establishment of the company itself, with his appointment as district superintendent of the company's lines in the southwest, with headquarters at St. Louis. His familiarity with all sections of the company's



COL. ROBERT C. CLOWRY.
New York.

property, acquired through years of personal inspection, together with an extensive speaking acquaintance among the vast working forces of the corporation, are advantages manifest in his administration and of great practical value.

CLARENCE H. MACKAY.

Clarence H. Mackay, New York, president of the Postal Telegraph-Cable Company, as well as of the several commercial cable interests, is the only living son of the late John W. Mackay, and succeeded to the control of the vast telegraph properties of his father on October 4, 1902, following the death of the latter which occurred on the previous July 20. Mr. Mackay was born in San Francisco, Cal., April 17, 1874. Since he assumed the direction of these trusts although a burden of heavy responsibility for so young a man, he has nevertheless displayed consummate skill in their management and in conducting their extension.



CLARENCE H. MACKAY.
New York.

WILLIAM H. BAKER.

William Henry Baker, vice-president and general manager of the Postal Telegraph-Cable Company, New York, has demonstrated successfully his capacity to preside over the destinies of a great telegraph company. This fact shows an inherent ability, a power of adaptation vouchsafed to but few men who have not grown up and developed in a given business, but which nevertheless has been a conspicuous feature in Mr.



WILLIAM H. BAKER.
New York.

Baker's career. Yet it should be said that under an early tutelage of such men as Col. A. B. Chandler and Gen. Thomas T. Eckert as telegraphers, and the late Edward C. Cockey, as an accountant, who were instrumental in the initial

shaping and development of the youth Baker much depends. Such associations naturally led him into telegraphy, and thus it was in early life he served both the Western Union and the Atlantic and Pacific telegraph companies, becoming secretary of the latter. Nevertheless, he quit the telegraph field for other occupations, at one time, indeed, holding a seat on the New York Stock Exchange. His eventual return to telegraphic work, however, was accomplished by the personal solicitation of Col. Chandler, his employer of former years, and then president of the Postal Telegraph-Cable Company, who secured Mr. Baker's services by tendering him a vice-presidency in the company, and who recognized in the new incumbent a man whom he believed to be eminently well fitted to discharge the duties of such a position. This was in 1889. How accurately Col. Chandler passed judgment is abundantly verified in the fact that Mr. Baker has since become ranking vice-president and general manager of the company. Mr. Baker's engaging personality, his close acquaintance with the details of the telegraph business, coupled with excellent judgment, enabling him to pass quickly upon questions coming before him for decision, together with a personal friendliness for the rank and file of the service, combine to give him an enviable standing in telegraph circles.

COL. A. B. CHANDLER.

Col. Albert B. Chandler, chairman of the Board of Directors of the Postal Telegraph-Cable Com-

COL. A. B. CHANDLER
New York

pany, New York, has made a distinct impress on telegraph life in America and in its upbuilding he has been a largely responsible factor. He was born at West Randolph, Vermont, August 20, 1837, and has been in the telegraph harness from its highest days in the fifties. A man of general well-born of broad and varied ex-

perience, cultivated tastes and intellectual charm, the education of his life has been such as to fit him for the conduct of large enterprises. To these he has brought a practical mind and ripe judgment. As a cipher operator when a young man in the service of the United States Military Telegraph in the War Department at Washington during the Civil War, Mr. Chandler naturally came in contact with prominent, forceful and authoritative men of affairs. The influences by which he was surrounded contributed to strengthen self-confidence and faith in his own inherent abilities, so that when later he took his place in the world he was in a measure well equipped to fight its battles and earn for himself a rightful place therein. He found his destined place in the telegraph. His extensive acquaintance with telegraph men and the telegraph business caused him to be looked upon as an authority and led him to be consulted and employed frequently by telegraph owners in matters pertaining to the development of telegraph property. His introduction into the Postal service need not be dwelt upon at this time. It followed in natural sequence to his relations with the late John W. Mackay.

PETER WEITZ.

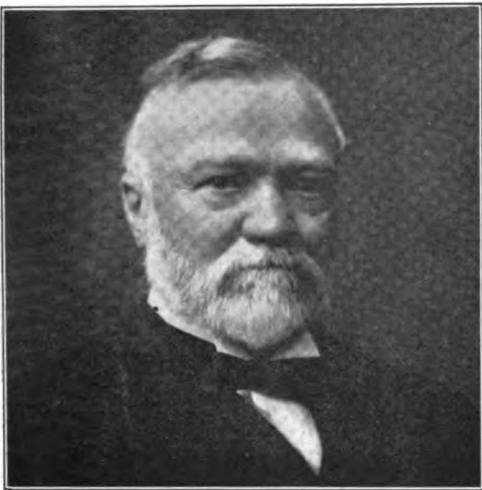
Peter Weitz, who is the agent for the United States Express Company at Johnstown, Pa., is a native of that state having been born at Mahoningtown, July 10, 1857. When not quite fifteen years of age, May 2, 1872, he became connected with the telegraph at Penn Station, Pa., soon thereafter being advanced to the post of that of an operator in the service of the Pennsylvania Railroad, a position he held until 1877. He served as agent and operator for the Allegheny Valley Rail-

PETER WEITZ.
Johnstown, Pa.

road until 1880, quitting which to become for the next few years a train despatcher for the Baltimore and Ohio Railroad. After this he was located at Johnstown where for eleven years he was agent, accepting his present position when the United States Express Company took over the express business of the Baltimore and Ohio Railroad.

ANDREW CARNEGIE.

It is something to say that a former member of the telegraph profession is regarded to-day as the richest man in the world. Not alone is it wealth that gives to Mr. Carnegie his greatest prominence, although wealth enables him to carry out his many plans of philanthropy, but his benefactions to the race will cause his name to be the longest remembered. From employment when barely thirteen years of age in 1848, as a messenger boy at Pittsburg for the Ohio and Atlantic Telegraph Company at \$2.50 a week to the possessor of individual wealth of a magnitude such as the world had never before witnessed, is a transition of which there are parallel cases but no equals. In briefly referring to the chief points of his career he describes himself as being at present a "man of all work." Mr. Carnegie still retains a kindly feeling for the telegraphic profession born of his own early experiences, and he is an honored member of



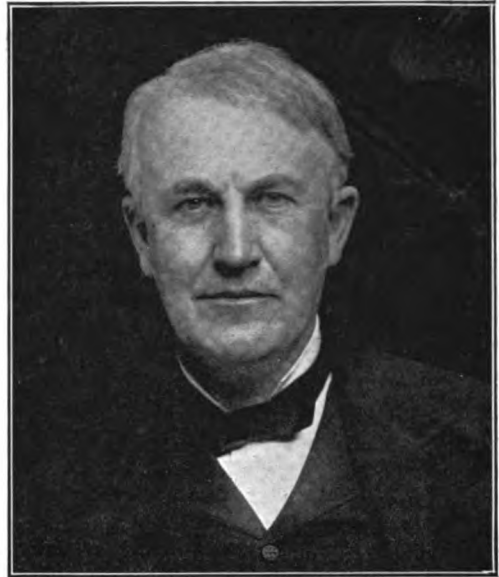
ANDREW CARNEGIE,
New York.

the Old Time Telegraphers' Association. He was born in 1835 at Dunfermline, Scotland, and his attachment to the land of his birth, to the home of his ancestry, with which he divides his time with the land of his adoption, constitutes a trait of character revealing at once loyalty, tenderness and sympathy for the associations and traditions of the past even as he possesses them in a practical measure for those of the present.

THOMAS A. EDISON.

Thomas A. Edison is another brilliant telegrapher who, having graduated long since from the key, still retains not only his old love for telegraphy, but his old regard for telegraphers as well. It would be superfluous at this time and under these circumstances to recount the nature, extent

and value of Mr. Edison's inventions. It is sufficient to say that they have accomplished vast results in the promotion of telegraphy and in the

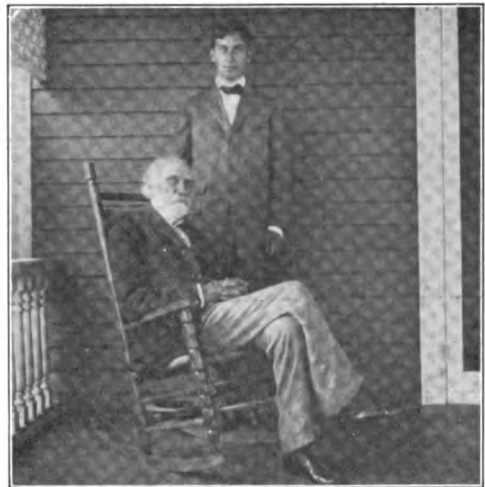


THOMAS A. EDISON,
Orange, N. J.

advancement of electrical science. Not yet sixty years of age, for he was born at Milan, O., February 11, 1847, it is to be hoped that he may be spared yet many years, and that the future may add not alone to the number of his inventions, for all that he discovers is valuable to human want and progress, but also to his well-being and happiness.

ORRIN S. WOOD.

Orrin S. Wood, the oldest living telegrapher, the dean of the profession in America, if not in



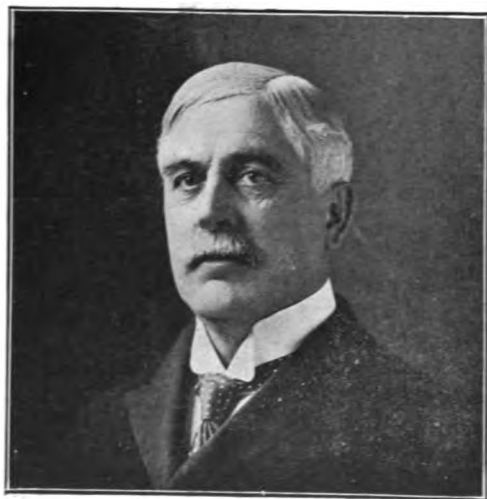
ORRIN S. WOOD,
New York,

the world, in fact, the first "Old Timer," needs no introduction in the columns of TELEGRAPH

AGE, for his unique and honorable position in telegraphy has secured for him abundant mention, and he enlists the respect and affection of telegraphers everywhere. Mr. Wood was born at Sherburne, N. Y., December 14, 1817, and is, therefore, nearing his eighty-ninth birthday. He entered the telegraph service at Washington, D. C., in August, 1844, and was an operator in the capital for seven months. He built the first telegraph line between New York and Philadelphia and opened the first telegraph office in New York at the corner of Hanover street and Exchange place, in 1845. The same year he built a line between Albany and Buffalo, and in 1847 built and opened lines between Niagara Falls, Toronto, Montreal and Quebec. He was superintendent of the Montreal Telegraph Company from 1847 to 1866, after which date he joined the Hon. Z. G. Simmons, of Kenosha, Wis., and rebuilt all lines northwest of Chicago. Shortly after he turned over all of these reconstructed lines to Jay Gould, which later were included in the system of the Western Union Telegraph Company. He accomplished much in behalf of the telegraph, and retiring at this time from active business, Mr. Wood has since lived a quiet life in New York, spending much of his time in his country home.

DAVID HOMER BATES.

David Homer Bates, who is now connected with the Singer Sewing Machine Company, New York, attained distinction as a telegrapher, an oc-



DAVID HOMER BATES,
New York.

cupation he followed many years. He was born at Steubenville, Ohio, July 3, 1843, and received his education at Pittsburg. He early learned to telegraph, and his entry into the service as an operator was March 11, 1859, in the employ of the Pennsylvania Railroad at Pittsburg. At the outbreak of the Civil War he was in the office of Col. Thomas A. Scott at Altoona, Pa., who ordered him to Washington. Accompanying young Bates was

David Strouse, who was the first superintendent of the United States Military Telegraph Corps; Richard O'Brien, who is now superintendent of the Western Union Telegraph Company at Scranton, Pa., and Samuel M. Brown, all of whom arrived at Washington seven days after Fort Sumter was fired upon, and who formed the nucleus of the United States Military Telegraph Corps. Messrs. Bates and O'Brien are the only survivors of this original quartette. Mr. Bates saw but limited service in the field, his duties in the War Department telegraph office keeping him closely confined to that position, where his record as a cipher operator is well known, and in connection with which many interesting and thrilling incidents might be related. At the close of the war Mr. Bates was appointed manager of the Consolidated American and Western Union Telegraph office at Washington, from which in 1875 he went to the Atlantic and Pacific Telegraph Company, there remaining until 1879. In that year the American Union Telegraph Company was started with Mr. Bates as president, later becoming vice-president when General Eckert took charge of affairs, January 1, 1880. The consolidation of this company with the Western Union Telegraph Company, of which General Eckert was made general manager, gave Mr. Bates the position of assistant general manager and acting vice-president on January 1, 1884. Mr. Bates later became president of the Baltimore and Ohio Telegraph Company, holding this place until October, 1887, when it passed into the control of the Western Union. This terminated Mr. Bates' telegraphic career. Since that period he has been identified with a number of interests, one being the Gamewell Fire Alarm Telegraph Company, of which he was vice-president; another, association with Bradstreet's Mercantile Agency and his present connection with the Singer Sewing Machine Company.

COL. JAMES R. GILMORE.

Col. James Ross Gilmore, U. S. A., retired, of Chambersburg, Pa., where he was born, was a volunteer in the United States service in 1861, and became an assistant in the United States Telegraph Corps. He assisted in building all the telegraph lines that connected the military camps with the capital; had charge of the first outpost office established in the army, and became superintendent of the corps in July, 1861. In the summer of 1862 he volunteered as a private and with the exception of temporary employment in the War Department at Washington, saw continuous active duty in the field in the Virginia campaigns and afterwards in the South. After his appointment as captain of volunteers he served respectively on the staffs of Generals Foster, Q. A. Gilmore and Sherman, with the latter of whom he was at the siege and capture of Savannah. He also took part in the siege and capture of Charleston. Captain Gilmore was mustered out of the

service in November, 1866, with the brevet rank of major and lieutenant colonel. Almost immediately he again entered the army, serving in the engineer department under General Gillmore, in connection with the rebuilding of the fortifications at New York, on the South Atlantic coast and in river and harbor improvements, his connection with Gen. Gillmore lasting from 1866 to 1888. From 1888 to 1902 he was detailed to duty on river and harbor improvements on the eastern shore of Lake Michigan with headquarters at Detroit. Since the latter year Col. Gilmore has been living in retirement. He takes an interested and active part in the local affairs of his town, where he is much respected. He is a member of the



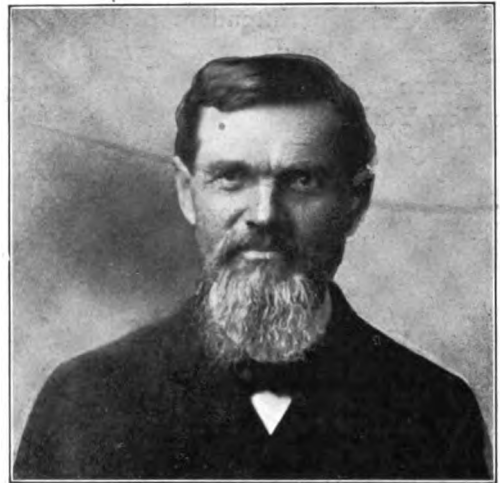
COL. JAMES R. GILMORE,
Chambersburg, Pa.

New York Commandery of the Military Order of the Loyal Legion of the United States, and of George Washington Post, No. 103, G. A. R., New York city. He is also a member of the Army and Navy Club, New York, the Union of the Titans, New York, the United Service Club, Philadelphia, the Society of the Army of the Potomac, as well as of other organizations.

JOHN F. LUDWIG.

John Frederick Ludwig, agent and operator of the Santa Fe, Prescott and Phoenix Railway Company, at Puntenney, Vavapai County, Ariz., is a native of Nepzin, Prussia, where he was born November 3, 1844. He became connected with the telegraph service as a messenger boy at La Porte, Ind., in 1858. Learning telegraphy he became an operator for the Lake Shore and Michigan Southern Railway from 1859 to 1864, and in July of the latter year he joined the United States Military Telegraph Corps, remaining in that service until the close of the Civil War. At Athens, Tenn., in the following October Mr. Ludwig together with J. E. Pettit, now chief operator of the Postal Telegraph-Cable Company, Chicago, and

secretary and treasurer of the Society of the United States Military Telegraph Corps, suffered capture by the rebels, and while so held both men worked what was known as the "Flag of Truce" line. For this service Messrs. Ludwig and Pettit



JOHN F. LUDWIG.
Puntenney, Ariz.

were later given an unconditional release as prisoners of war. Mr. Ludwig saw considerable further service in the South extended as far as Texas from which in the fall of 1866 he returned to his home in Indiana. From 1868 to 1891 Mr. Ludwig was manager of the Western Union office at Burlington, Iowa, and in 1894 had charge of the same interests at Ash Fork, Ariz., and later of the Prescott office, accepting his present position in August, 1896.

JAMES N. WORL.

James Norris Worl, formerly well known in telegraph circles, who resides at Westfield, N. J.,



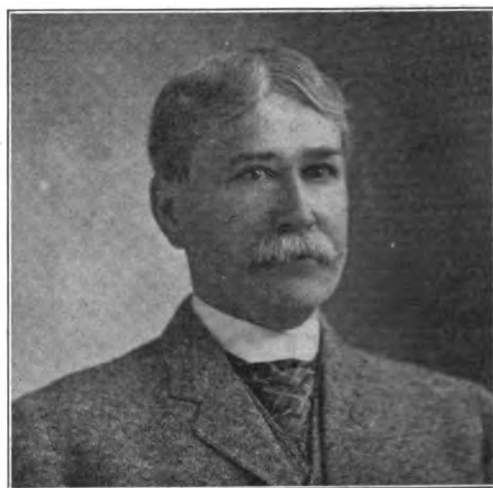
J. N. WORL,
Westfield, N. J.

was born in Philadelphia April 15, 1833. His first telegraph employment was in May, 1848, when he became a message clerk and placed in

charge of the batteries in the office of the Magnetic Telegraph Company in his native city. He became an operator in the year following. In 1853 he was appointed manager at New Hope, Pa., relieving James Merrihew, who afterward became general superintendent of the Western Union Telegraph Company, at New York. After a brief return to Philadelphia, he was transferred to the New York office at 5, Hanover street; once again going back to Philadelphia, where he remained as an operator until 1859, when he was transferred to the Baltimore office, a position he retained until 1862. At the latter date he was appointed manager and superintendent of the Independent Telegraph Company, a new opposition line extending from Portland, Me., to Washington, D. C. It was at this time that his sensational arrest by the government occurred for alleged complicity in the bogus Presidential proclamation, which was afterwards traced to Joseph Howard, Jr.. He then organized and became the president of the Western Maryland Telegraph Company, extending from Baltimore, westward. In 1865 he constructed and introduced the first private telegraph line to connect business offices, etc., in Baltimore and Philadelphia, the construction of which he continued until the introduction of the telephone. In 1866 he organized and promoted the Baltimore Local Telegraph Company. In 1867, in conjunction with his brother, W. S. Worl, he secured a special grant from Congress giving his company, the American Atlantic Cable Company, the exclusive right for twenty years, to land ocean cables on the Atlantic coast, under which right the shore connections of the United States Direct Cable and the French Cable were laid, the work being done by Siemens Brothers, of England. In 1870 Mr. Worl engaged in the business of manufacturing Portland cement, and in 1904 retired permanently from business.

JOHN M. CARNAHAN.

John Mitchell Carnahan, manager of the Western Union Telegraph Company, at Missoula, Mont., a position he has held since 1890, is a native of Ohio in which state he was born at Blanchester, October 1, 1849. His date of entry into the telegraph service was in 1863, at Athens, O. Subsequently he became an operator first in Cincinnati, and afterwards at Nashville, Tenn. From 1868 to 1874 he held the position of manager at La Crosse, Wis., and from 1874 to 1881 he filled a similar post at Bismarck, North Dakota. Then for the following nine years he was engaged in other business, when he accepted his present position. On July 5, 1876, Mr. Carnahan was the first to furnish the news to the world of the Custer massacre, which occurred on June 26, on the Little Big Horn, Mont. Mr. Carnahan is the agent in Montana of the Telegraphers' Mutual Benefit Association of New York.



J. M. CARNAHAN.
Missoula, Mont.

GEORGE F. BROWN.

George Francis Brown, now retired and living at Ogden, Utah, is a type of a thrifty class of telegraphers. He was born at Rumney, N. H., March 1, 1847, and when but thirteen years of age was beginning his telegraphic career at Palmyra, Wis., in 1860, as an operator on the Milwaukee and Prairie du Chien Railway. His subsequent career from 1861 to 1869 saw him an operator for the Western Union Telegraph Company at Milwaukee and Indianapolis, and at Cheyenne and



G. F. BROWN.
Ogden, Utah.

Salt Lake City. Then from 1869 to 1871, he was chief operator for the same interests at Corrinne, Utah. Accepting the management of the Atlantic and Pacific Telegraph Company at Ogden, he retained the same for seven years, and then from 1878 to 1891 he was with the Central Pacific Railroad at the same point, first in the freight department and during the last five of these years as agent for the road. Mr. Brown's investments in real estate at Ogden have proved to be profitable, for they enabled him to retire from all business about ten years ago.

MICHAEL F. MAHER.

Michael F. Maher, the senior partner of the stock brokerage firm of Lithgow, Maher and Company, 16 State street, Boston, affords another example of the successful telegrapher. Born at Quebec, Canada, September 21, 1856, he entered the Western Union Telegraph Company service as a messenger in 1870 at Fall River, Mass. Speedily acquiring a knowledge of the dots and dashes, he became an operator, serving from 1874 to 1883, first at Fall River for the American Union Telegraph Company and afterwards for the Western Union at Boston, where he was manager of the Fish Bureau, Commercial Wharf. The strike of 1883 caused him to enter the brokerage field, and he became an operator for Tower, Giddings and Company, a position he held until 1900, when he embarked in business on his own account. Mr. Maher is a member of the Elks, of the Winthrop Yacht Club, the Dorchester Driv-



MICHAEL F. MAHER,
Boston, Mass.

ing Club, the Riding and Driving Club, and the Metropolitan Driving Club, all of Boston. To none of these societies, however, is he more loyal than to the Old Time Telegraphers' and Historical Association, in whose ranks so many of his telegraphic friends are enrolled.

CHARLES J. GLIDDEN.

Charles J. Glidden, the Boston millionaire, who has made his name famous by his numerous and extended motoring trips, encompassing the globe itself, is a native of Lowell, Mass., in which city, in 1871, he entered the telegraph service as a messenger boy, in the employ of the Franklin Telegraph Company. He afterwards became an operator in Boston for the Atlantic and Pacific Telegraph Company, subsequently becoming manager of the office at Manchester, N. H., for the same interests. Leaving the telegraph for the telephonic field, in which he speedily acquired large wealth, due to his ceaseless activities and rare business judgment, between the years 1877

and 1901, he was treasurer and president of no less than eight subsidiary companies of the American Bell Telephone Company. Of late years

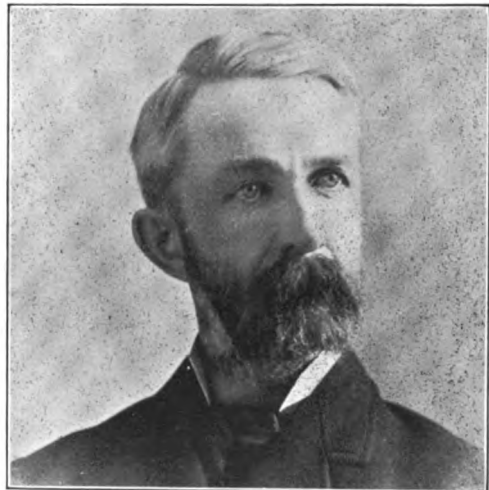


CHARLES J. GLIDDEN,
Boston, Mass.

Mr. Glidden's chief pleasure has been derived from his extensive automobile touring trips. These thus far have been extended to thirty-five countries, and cover a distance traveled of 33,600 miles. His next trip, having Mexico City for its objective point, will be unique in many particulars, inasmuch as after making the run from Boston to Chicago over the ordinary highway, the entire remainder of the journey, including that through Mexico, will be accomplished in his machine on railroad tracks.

SIDNEY B. GIFFORD.

Sidney Brooks Gifford, of Syracuse, N. Y., whilom superintendent of the Western Union



SIDNEY B. GIFFORD,
Syracuse, N. Y.

Telegraph Company, than whom but few have a more extended historical and reminiscent acquaintance with the telegraph, was born in the

city in which he resides September 9, 1836. His first telegraphic employment dates back well on towards sixty years, for, as he says, he "carried messages" in July, 1847. His regular entry, however, as a messenger boy was on May 15, 1850. With a natural bent for telegraphy, he soon acquired the art, and began his service as an operator for the New York, Albany and Buffalo Telegraph Company in his native town. In 1851 he was given charge of the office at Canajoharie, N. Y., thence going in the same capacity to Auburn. In September, 1852, now fifty-four years ago, he was transferred to the only office the company possessed in New York city, located at 2½ Wall street. He inaugurated the marine service at Sandy Hook in the spring and summer of 1853. He then returned to New York, but in 1854 was sent to Syracuse, where later he became chief operator and circuit manager of the Western division. In 1864 the company was absorbed by the Western Union, and Mr. Gifford was appointed district superintendent, a position he continued to hold until his retirement from the telegraph service, July 1, 1902. He is now living quietly at Syracuse, where he is held in high esteem by a large circle of friends and neighbors.

WALTER G. BROWNSON.

Walter G. Brownson, of Toledo, O., who now is at the head of the Electro-Chemical Ring Company, that city, was born at Monticello, N. Y., February 7, 1837. His first experience in the



W. G. BROWNSON,
Toledo, O.

telegraph service was as a messenger at Poughkeepsie, N. Y. His telegraphic and subsequent career, until 1900, when he engaged in his present occupation, was passed in the railroad service. The positions held may be briefly summed up as follows: Operator, agent, train despatcher, division operator for the Erie and Atlantic and Great Western; chief despatcher and superintendent of telegraph of the Cleveland and

Pittsburg Railroad; superintendent of the Panhandle Railway; master of transportation of the Cairo and St. Louis Railroad; superintendent of the Clover Leaf Railroad; assistant superintendent of the Chicago and Northwestern Railway; superintendent of the Fremont, Elkhorn and Missouri Valley Railway; assistant superintendent of the Mobile and Ohio Railroad; superintendent of the floating equipment of the Central Railroad of New Jersey; general manager of the Charleston, Sumter and Northern Railway, and general manager of the Santee Construction Company.

DANIEL COLESTOCK.

Daniel Colestock, a retired telegrapher, of Titusville, Pa., was born in Columbiana County, Ohio, September 29, 1843, and entered the telegraph service at Bayard Station, O., on the line



D. COLESTOCK,
Titusville, Pa.

of the Cleveland and Pittsburg Railroad in 1858. In 1861 he became a member of the United States Military Telegraph Corps, in which he served throughout the Civil War. The American Telegraph Company furnished him employment until 1866, after which he was with the Western Union Telegraph Company until 1889.

CHARLES J. CHRISTIE.

Charles J. Christie, of Cincinnati, is another telegrapher who is meeting with success since he abandoned the service attaching to the dot and dashes. He was born at Xenia, O., December 21, 1864, and entered the telegraph service at that point in 1879. From 1879 to 1884 he was an operator for the Western Union Telegraph Company, subsequently serving The Associated Press until 1889. Entering journalism, from 1889 to 1896 he was connected with the Cincinnati Enquirer, first as a reporter and afterwards as

editor, when he became managing editor of the Cincinnati Commercial Tribune, a position he continued to hold until 1900. Leaving the newspaper field he became secretary to Mayor Fleisch-

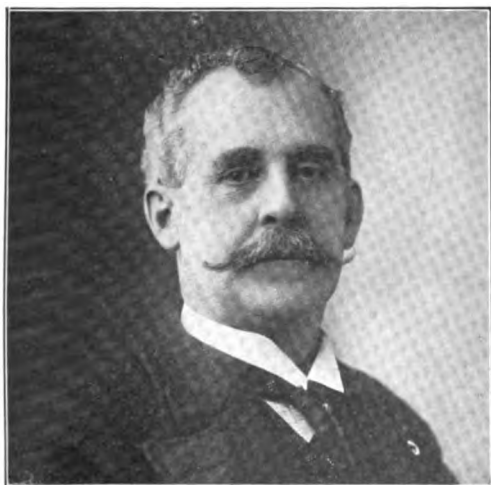


CHARLES J. CHRISTIE,
Cincinnati, O.

mann of Cincinnati, and vice-mayor of that city from 1900 to 1903, when he accepted the assistant secretaryship of The Fleischmann Company, where he now is.

STEPHEN E. BARTON.

Stephen E. Barton, now extensively engaged in the fire, marine and casualty insurance at Boston, as a member of the firm of Starkweather and Shipley, has had a varied experience as a telegrapher. He was born at Oxford, Mass., December 24, 1848. Becoming an operator, he entered the telegraph service at Hilton Head,



STEPHEN E. BARTON,
Boston, Mass.

S. C., in 1863, during the Civil War as a member of the United States Military Telegraph Corps, serving through the war. Going west, he was

with the United States and Western Union telegraph companies at Cincinnati and other points in 1865-1866, serving afterwards with the Atlantic and Pacific and Franklin telegraph companies at Springfield, Mass. During 1867 to 1869 he was in the employ of the New York, Newfoundland and London and the Cape Breton and Newfoundland telegraph companies; in 1870 serving in the cable department of the Western Union at 145 Broadway, New York, and in the Cape Breton cable office in 1871. In 1872-'73 he was an operator in the Franklin Telegraph Company at Boston and at Worcester. For a while he was a correspondent of the Boston Herald. Branching into the fire insurance business in 1874, an occupation in which he has since remained, he is still, as he says, "One of the boys."

GEORGE A. HAMILTON.

George Ansin Hamilton, electrician of the Western Electric Company, New York, was born at Cleveland, O., December 30, 1843. His tele-



GEORGE A. HAMILTON,
New York

graphic career began as a messenger boy at Salem, O., in 1860. Subsequently he served as lineman, operator, chief operator, manager, electrician and electrical engineer in both the railroad and commercial services. From 1873 to 1875 he was engaged with Prof. Moses G. Farmer at Boston in conducting experimental work and in the manufacture of dynamos. He will be more especially remembered here in New York between the years 1875 and 1889, first as the assistant and afterward as electrician for the Western Union Telegraph Company. It was his good name and enviable reputation as an electrician that took him out of the telegraph and into other employ. Mr. Hamilton's excellent work in his present office during the last nearly eighteen years has served but to strengthen the high estimate that was early placed upon his abilities as an electrician.

DAVID R. DOWNER.

David Robinson Downer, who is engaged in the gold and silver refining business at Newark, N. J., and whose home is near by in the outlying suburb of East Orange, is a native of the city of New York, where he was born November 15, 1839. His first connection with the telegraph was in the employ of the Delaware, Lackawanna and Western Railroad at Montrose Station, Pa. This was in 1866. For eighteen years he continued in the telegraph service, railroad and commercial, finally leaving the Western Union in April, 1884, resigning his position as assistant manager at 195 Broadway, New York, his brother, A. S. Downer, for some years previous being the manager, to enter his present business. Mr. Downer has prospered and has amassed



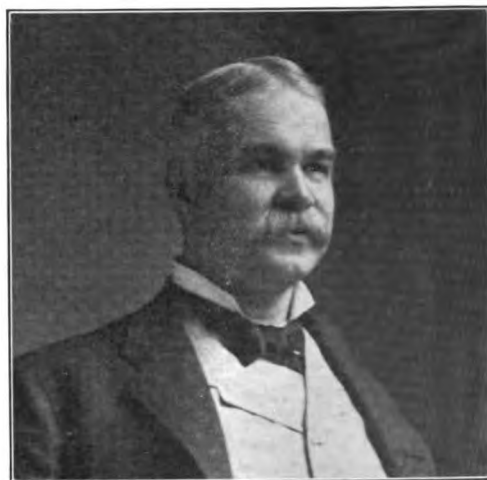
DAVID R. DOWNER,
Newark, N. J.

a competency. His friendly regard for his telegraphic friends of other days has never abated, for, as he himself says. "Although I have been away from my old telegraph friends for so long a time I retain the warmest recollections of friendship for those with whom so many years of my life were spent."

WILLIAM A. HUFF.

William Augustus Huff, of Greensburg, Pa., was born at Altoona, that state, January 21, 1856. He learned telegraphy, entered the employ of the Pennsylvania Railroad Company in 1872, and served as an operator for a number of years at various points along that line between Pittsburg and Harrisburg. For a number of years Mr. Huff has been engaged in the banking business at Greensburg, now occupying the position of secretary and treasurer of the Safe Deposit and Trust Company of that place. He has other important business connections, being identified with coal and glass interests; holding a directorship in the First National Bank of Hollidaysburg, Pa., besides being president of

the Westmoreland Water Company, of Greensburg; president of the Irwin Water Company, of Irwin, Pa., and president of the Derry Water



WILLIAM A. HUFF,
Greensburg, Pa.

Company, of Derry, Pa. Mr. Huff is a reliable and efficient bank officer, and has won for himself an enviable reputation for good judgment, correct business methods and financial ability.

JAMES HALLEY.

James Halley, of Rapid City, S. D., affords another example of the successful telegrapher, developed outside of the vocation originally selected in early life. Born in Stirling, Scotland,



JAMES HALLEY,
Rapid City, So. Dak.

January 7, 1854, and coming to this country in 1855, his boyhood was spent in Washington, D. C., where he became a telegraph operator in the employ of the Western Union Telegraph Company. He went to Dakota in 1876. Imbued with the genuine Scottish spirit of enterprise, he quit telegraphy in 1879 to accept the position

of teller in the First National Bank of Deadwood. The possibilities inherent in the banking business determined young Halley's future. Striking out for himself he organized the private banking house of Lake, Halley and Patterson, at Rapid City, the business of which was afterwards, in 1884, merged with that of the First National Bank, Mr. Halley being made cashier of the concern. In 1898 he succeeded to the presidency. Besides this office Mr. Halley is president also of the Harney Peak Bank and of the Bank of Hot Springs, all of which institutions are thriving under his direction. He is interested in other business enterprises in his section, has been twice Mayor of his city, a member of the state legislature, and otherwise takes an active part in all that makes for the civic advancement of the state and nation.

GEORGE W. ELLIOTT.

George W. Elliott, of the firm of George W. Elliott and Company, dealers in grain, hay, straw,



GEORGE W. ELLIOTT,
Sea Bright, N. J.

coal, wood, etc., at Sea Bright, N. J., is a telegrapher who left the service for commercial pursuits in 1891. He was born in Baltimore, Md., and for many years pursued the calling of a telegraph operator, entering the service at Chatsworth, N. J. During most of his telegraphic career, he served principally at points in New Jersey. He has met with success in his latter business and is a man much respected where he resides. For five annual terms he served his city as Mayor and won the respect and gratitude of his fellow citizens by his uncompromising honesty and ability displayed in overcoming corruption and reducing the city's indebtedness.

JOHN E. DUNNING.

John E. Dunning, now of the Allen and Dunning Company, Paterson, N. J., was born at Whitesboro, N. Y., January 4, 1836. He became

associated with the railroad telegraph at Utica, N. Y., in February, 1851. On May 9, 1872, he retired from the telegraph and agency service



J. E. DUNNING,
Paterson, N. J.

of the Erie Railroad to enter the cigar manufacturing business at Paterson, from which he has derived substantial benefits. Mr. Dunning and his wife are regular attendants at the reunions of the old timers.

JOSHUA M. SPENCER.

Joshua M. Spencer, who is now engaged in the practise of law in Rising Sun, Ind., is a native of that town. Being refused enlistment as a soldier on account of youth, he learned telegraphy and joined the United States Military Telegraph Corps in 1863, when in his sixteenth year. His duties confined him mainly to the



JOSHUA M. SPENCER,
Rising Sun, Ind.

state of Kentucky. At the close of the war he found employment in the Western Union office, Cincinnati, where he remained many years, and

where he began the study of law. Some of his co-operators in those early days were Thomas A. Edison, George Kennan and some others who have since become distinguished. He worked the receiving side of the first duplex wire operated between New York and Cincinnati, with Samuel S. Bogart and Edward Kearney at the New York end. He left the Cincinnati office in 1888, having for some years previous been taking The Associated Press reports and Washington specials half the night, and practising law in the daytime. Since that time Mr. Spencer has practised law in Rising Sun, has served as Mayor of the city for five years, and once was a candidate for Congressional honors.

WILLIAM H. SAWYER.

William H. Sawyer, formerly a well-known New York telegrapher, whose home is now at Pasadena, Cal., but who spends much time in



WILLIAM H. SAWYER,
Providence, R. I.

travel, was born in New York city, August 19, 1845. He became an office boy for the American Telegraph Company, 145 Broadway, New York, May 16, 1861. He soon became an efficient operator and later was made assistant night manager under D. Wilmot Smith. The Insulated Lines Telegraph Company in 1865 appointed Mr. Sawyer manager at Philadelphia, afterwards making him superintendent. Returning to New York in 1867, he became an operator for the Bankers' and Brokers' Telegraph Company, two years later accepting the post of inspector of the Gold and Stock Telegraph Company. In 1872 he was appointed superintendent of the American District Telegraph Company, New York, subsequently becoming superintendent of the electrical bureau of the Centennial Exposition, Philadelphia. In 1878 he became associated with Eugene F. Phillips at Providence, R. I., in the manufacture of insulated wires, and

in 1882, when the American Electrical Works was incorporated, became secretary and treasurer, also filling the position of superintendent until 1900, when he retired permanently from all active business. Mr. Sawyer retains his interest in the telegraph, and a recent visit to New York revealed to him several old acquaintances whom he had not met in years and whose gray hair stamped them as "Old Timers."

FRANK J. MULCAHY.

Frank J. Mulcahy, president of the Eaton, Cole and Burnham Company, Bridgeport, Conn., was born at Cleveland, O., July 16, 1858. His entry into the telegraph service dates from April 9, 1876, in the city of his birth. Here from 1876 to 1889 he was a telegraph operator and train despatcher of the Pennsylvania Company Lines. A man of broad intelligence and possessed of indomitable energy, he abandoned telegraphy and railroading in the hope of directing his activities along more congenial lines of work. Hence it was that during the years 1891-1893 he filled the position of purchasing agent at Chicago of the World's Columbian Exposition. Following this, from 1893 to 1900, he was the general purchasing agent of the Crane Company, Chicago. Because of this association, Mr. Mulcahy derived a large amount of practical knowledge, re-

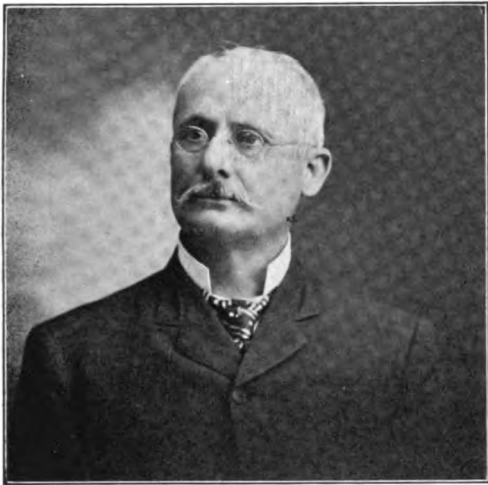


FRANK J. MULCAHY,
Bridgeport, Conn.

garding pipes, etc., which led to his appointment as commissioner of the Soil Pipe Association of the United States, a post he continued to hold during the years from 1900 to 1904. His position at the head of the Eaton, Cole and Burnham Company, one of the best known concerns of the kind in the country, affords ample opportunity for the display of the executive ability possessed by Mr. Mulcahy.

JOSEPH H. LAFAYE.

Joseph Henry Lafaye, of New Orleans, La., in which city he was born November 14, 1843, became a messenger in the telegraph service in his native place in 1859, developing into an operator in 1861. This was at the outbreak of the Civil War. He was stationed as an operator first at Fort McComb, La., afterward being transferred to Algiers under command of Gen. Lovell, where he remained until the place and the telegraph office were taken possession of by Admiral Farra-



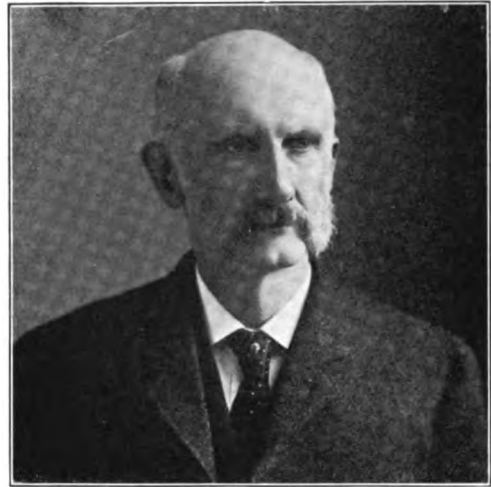
JOSEPH H. LAFAYE,
New Orleans, La.

gut's fleet, April 25, 1862. At this juncture Mr. Lafaye resigned from the telegraph service to follow commercial pursuits, at first holding office positions of trust, subsequently embarking in business on his own account. He is now the head of the successful firm of J. Henry Lafaye and Son, brokers in breadstuffs, provisions, grain, etc. Mr. Lafaye holds an enviable position in the business, civic and social life of his city. He has been a member of the New Orleans City Council, and for twelve years a director of the New Orleans Board of Trade, for two terms its president. He is a member of the board of commissioners of the New Orleans City Belt Railroad, and of City Park, and is also a director of the German-American Savings Bank.

WILLIAM N. EASTABROOK.

William N. Eastabrook, a former telegrapher and now in the telephone field, being the treasurer and a director of the New York and Pennsylvania Telephone and Telegraph Company, at Elmira, N. Y., was born at Scranton, Pa., March 25, 1847. His entrance into the telegraph service was in 1863 as an operator and agent for the Delaware and Hudson Canal Company at Providence, now a part of Scranton. Following this early experience he became successively operator, division operator, train despatcher and trainmaster on the Northern Central Railway,

with headquarters, respectively, at Williamsport, Pa., and Elmira, N. Y., during the period embraced within the years 1864 to 1882. With the



WM. N. EASTABROOK,
Elmira, N. Y.

advent of the telephone, he entered that field in 1879 and successfully developed the business in Southern New York and Northern Pennsylvania. In 1882 he became vice-president and general manager of the New York and Pennsylvania Telephone and Telegraph Company, a position he continued to hold until 1900. Mr. Eastabrook is regarded as an authority in the telephone situation in the "Southern Tier," and has acquired wealth and position.

PAUL R. WIGGS.

Paul R. Wiggs, of the real estate and insurance firm of Aird and Wiggs, Jacksonville, Fla.,



PAUL R. WIGGS,
Jacksonville, Fla.

was born at Goldsboro, N. C., January 16, 1869. He entered the telegraph business in July, 1882, at Chauncey, Ga. For ten years, or until April,

1892, he was an operator at various points for the East Tennessee, Virginia and Georgia Railway and for the Western Union Telegraph Company, a part of the time being a clerk in the office of Superintendent B. F. Dillon of the latter company at Jacksonville. In April, 1892, he was promoted to be chief clerk and assistant to Mr. Dillon, retaining that position until November, 1902. Retiring from the telegraph, during the following three years he was vice-president of a wholesale cigar and tobacco company. Since then he has been in the business first indicated in this sketch. During his residence in Jacksonville, Mr. Wiggs has identified himself with the civic progress of the place. In 1901-1903 he served as a member of the city council, and since its organization in 1895, he has been auditor of the Citizens' Loan Association.

WILLIAM E. BECKLEY.

William E. Beckley, of Springfield, Mo., is a well-known telegrapher, who has had a varied ca-



WILLIAM E. BECKLEY,
Springfield, Mo.

reer in his profession, and who was born at Norristown, Pa., October 7, 1852. His entry in the telegraph service was in 1866, at Schuylkill Haven, Pa., with the Philadelphia and Reading Railroad. He has since served in both railroad and commercial employ, also has done duty with The Associated Press. He was a volunteer to go South at the time of the yellow fever epidemic in Mississippi and Louisiana in 1878, and was in New Mexico during the Indian troubles. He served The Associated Press at St. Louis in 1882-'85, and has since done cable, broker and race work in New York. In 1876 he accompanied Collins Brothers to Brazil, South America, who went thither to engage in railroad construction.

FRANK J. JONES.

Frank J. Jones, of Warren, O., train despatcher, is a native of Cleveland, where he was born June 5, 1850, and where he was inducted into the

telegraph service March 11, 1874, as a messenger boy of the Atlantic and Great Western Railway, now a portion of the Erie system. The year following, May, 1875, he became an operator, a position he continued to fill for nine years, when



FRANK J. JONES,
Warren, O.

he received the appointment as train despatcher, 1884. He is still employed as a despatcher on the Mahoning division of the Erie Railroad, at Youngstown, O. Since May, 1900, he has been the secretary and treasurer of the New York, Pennsylvania and Ohio Mutual Benefit Association, with offices at Warren, O.

JAMES A. WILSON.

James Allen Wilson, an operator in the Postal service at Pittsburg, Pa., who is usually a well-



JAMES A. WILSON,
Pittsburg, Pa.

known figure at the annual meetings of the Old Time Telegraphers' and Historical Association, is a native of Ohio, in which State he was born at

East Palestine, May 9, 1856. His entry into the telegraphic ranks was at Monongahela City, Pa., 1866, as a messenger for the Pacific and Atlantic Telegraph Company. After two years, when yet a lad, he was made an operator and in this capacity at the same place, until 1876, he served respectively not only his initial company but the Western Union and the Pennsylvania Railroad as well. He was then given the managership of the Western Union office at Foxburg, Pa. Since that time Mr. Wilson has remained constantly in the telegraph harness, a faithful worker in the commercial and railroad service besides the Carnegie Steel Works, his connection with the Postal Telegraph-Cable Company at Pittsburg dating from 1901.

ISRAEL G. BUTTERFIELD.

Israel G. Butterfield, of Emlenton, Pa., is a telegraph operator for the Pennsylvania Railroad, in whose employ he first entered forty-three years ago, and who is representative of the best type of the faithful telegrapher of the rail-



I. G. BUTTERFIELD,
Emlenton, Pa.

road class. He was born near Saltsburg, Westmoreland County, Pa., June 4, 1843, and his association with the telegraph dates from August 25, 1863, when he became assistant agent and operator at Blairsville Intersection of the Pennsylvania road. On February 1 of the following year he was appointed manager of the company's telegraph office at East Liberty, where he remained until July, 1866, when he was made a local agent of the Western New York and Pennsylvania Railroad, a position he continued to fill until 1873. At this time Mr. Butterfield was obliged to relinquish business on account of failing health, and it was not until 1879 that he was enabled to return to his post of duty. From the latter year until 1900 he filled the position of agent at Emlenton and is now regularly employed in the telegraph service of the road at that point.

CYRUS MOFFET.

Cyrus Moffet, manager of the branch office of the Postal Telegraph-Cable Company, at 54 North Third street, Philadelphia, was born in that city in 1857, where he also entered the telegraph ser-



CYRUS MOFFET
Philadelphia, Pa.

vice in 1876. From that date to this, prior to entering the Postal employ, he has worked for four different companies, namely, the Continental, the American Union, the Baltimore and Ohio, and the Bankers and Merchants, in each of which he made an excellent record for ability and industry.

JOHN A. TOWNSEND.

John Alfred Townsend, manager of the Western Union Telegraph Company at Dunkirk, N. Y., has long been in telegraph harness, and is justly regarded as one of the most faithful of



JOHN A. TOWNSEND,
Dunkirk, N. Y.

the large army who serve that company. He was born at Akron, O., April 24, 1837, his date of entry into the service being at that place,

March 1, 1849, as a messenger. For a year he filled this position when, having learned telegraphy, he was promoted to be an operator at that point. After one or two minor changes early in 1851 he was placed in charge of the O'Reilly telegraph interests at Cuyahoga Falls, O., from which, however, in November of the same year he was transferred to the office at Dunkirk, N. Y. When the telegraph at the latter point was united with the Western Union his services as manager were retained by the latter company, and continuously ever since he has served that corporation—a long and honorable tenure.

ROBERT T. BISHOP.

Robert Toombs Bishop, chief operator of the Western Union Telegraph Company at Montgomery, Ala., is a man well and favorably known in Southern telegraphic circles. He is a



ROBERT T. BISHOP,
Montgomery, Ala.

Georgian, having been born in Dougherty County, that state, March 30, 1858. His initiative into the telegraph service was at Dawson, Ga., in 1872. Subsequently he served at Albany, Macon, Columbus and Savannah, Ga., Montgomery, Ala., and New Orleans, La. Returning to Montgomery Mr. Bishop has risen through the grades of operator, wire chief, night chief operator to that of chief operator, having held the latter position for twenty years. His entire telegraphic career covering a period of thirty-four years of continuous service, has been passed in the Western Union employ, during which time he has been held in the highest esteem by his official superiors. Mr. Bishop was one of the charter members of the Old Time Telegraphers' Association, also of the Telegraphers' Mutual Aid Society. He is a member of the Methodist Church in which for twenty-five years he has been a steward.

HENRY A. REED.

Henry A. Reed, president of the Bishop Gutta Percha Company, New York, was a telegrapher in the old days, and was a close personal friend of Prof. S. F. B. Morse. Mr. Reed was born at Carmel, N. Y., February 11, 1829. He learned telegraphy in 1849 and in March, 1850, opened at Croton Falls the first office on the Harlem Railroad. A number of other offices were established by him in close succession, when, in July, 1852, he was appointed an operator of the New York, Albany and Buffalo Telegraph Company at 24 Wall street, New York. In March, 1853, he took charge of the company's office at Poughkeepsie, N. Y., interests which he continued to serve for seventeen years, until the company was absorbed by the Western Union Telegraph Company. Mr. Reed conducted a book store for a portion of the time in connection with the telegraph office, and here it was that Prof. Morse, who resided in Poughkeepsie, made his headquarters. The two men became fast friends. Mr. Reed acted as su-

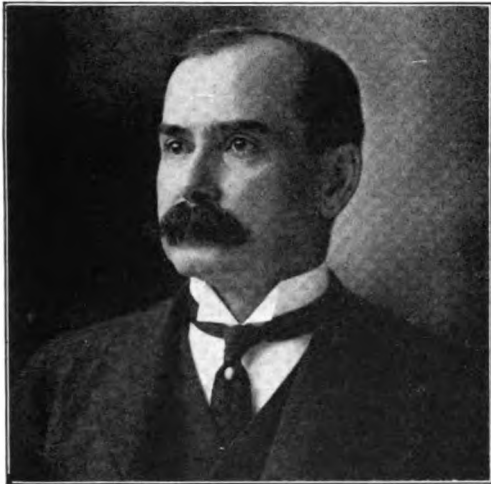


HENRY A. REED,
New York, N. Y.

perintendent of the telegraph line from New York to Buffalo, during the absence of Superintendent F. H. Palmer, when engaged in laying a cable from Nova Scotia to Newfoundland in the summer of 1856. Among others, Walter C. Humstone, who afterwards became superintendent of the Western Union Telegraph Company, at New York, learned telegraphy in Mr. Reed's office. Mr. Reed after leaving Poughkeepsie in 1876 had been instrumental in settling up successfully the estate of Mr. Bishop, and when in 1885 a company was formed to carry on the business of manufacturing wires and cables, Mr. Reed was made successively secretary, manager and treasurer, succeeding to the office of president in 1904. Mr. Reed is regarded as an authority on all kinds of electric cables. He planned the first cables which were successful in carrying high currents underground in New York, and all cables used by the government in electric buoy work.

THOMAS E. CLARKE.

Thomas E. Clarke, general superintendent of the Delaware, Lackawanna and Western Railroad Company, Scranton, Pa., who learned telegraphy at corps headquarters while yet a drummer boy in the army during the Civil War, serving from 1863 to 1865, was born at Connersville, Ind., in 1850. An estimate of the character of the man may be made from the fact that during his two years' army experience, boy that he was, he never answered sick call and never had a furlough. His first employment as a telegraph operator was in the railroad service at his native place in 1868. The year following he continued such employment at St. Paul, and in 1870 was appointed train despatcher and superintendent of telegraph of the St. Paul and Sioux City Railroad. Later Mr. Clarke held numerous official positions with various railroads—trainmaster, master of transportation, assistant superintendent, division superintendent, general super-



THOMAS E. CLARKE,
Scranton, Pa.

intendent and general manager. Six years ago he was appointed to his present position. In a recent letter he wrote: "An officer in the operating department of a railroad, especially if he is a telegrapher, is virtually connected with the telegraph service. My fondness for telegraphy has never ceased, and it has always been my practice to keep an instrument on tick in my private office."

CHARLES F. CLEMENT.

Charles F. Clement, of Minneapolis, Minn., secretary and treasurer of the "Soo" line, who has reached his present position climbing steadily up through the many grades from telegraph operator, was born at Kenosha, Wis., August 10, 1844. His introductory into the telegraph service was at Racine, Wis., in 1863, in the employ of the then Chicago and Milwaukee Railroad. During the following three years he was alternately in the railroad and commercial telegraph service,

where he was made train despatcher at Winona, Minn., of the Winona and St. Paul Railroad, a position he held for four years relinquishing it to



CHARLES F. CLEMENT,
Minneapolis, Minn.

become paymaster and general accountant of the same interests. In 1874 he was appointed chief clerk to the manager of the Southern Minnesota Railroad and the Chicago, Milwaukee and St. Paul Railway, at La Crosse, Wis., retaining the place for ten years, when he was transferred for a year to Mason City, Ia., as chief clerk to the superintendent of the latter road. After this, covering the years 1886 to 1890, he was successively car accountant, stationer, superintendent of telegraph and claim agent of the "Soo" line at Minneapolis; general storekeeper 1890 to 1892, since which time he has filled his present position of secretary and treasurer.

FRANK S. GANNON.

Frank S. Gannon, of New York, originally a



F. S. GANNON,
New York, N. Y.

telegrapher and now a railroad president, was born at Spring Valley, N. Y., September 16, 1851,

and entered the telegraph service as a messenger at Port Jervis, N. Y., in 1868. He was an operator and agent for the Erie Railroad at that point until 1871, between which date and 1875 he was clerk and operator in the president's office; clerk in the superintendent's office, and agent and train despatcher on the New Jersey Midland and the New York and Oswego Midland railroads, now the New York, Susquehanna and Western and the New York, Ontario and Western. From 1875 to 1881 he was first train despatcher and afterwards master of transportation on the Long Island Railroad. Since that time he has occupied the positions of supervisor of trains, Pittsburg division, Baltimore and Ohio Railroad; general superintendent of the old New York and Northern, from 1881 to 1886; general superintendent and general manager, Staten Island and Rapid Transit Company, 1886 to 1896; general superintendent, New York division, Baltimore and Ohio Railroad, 1890 to 1896; president Staten Island Railway, 1893 to 1897; third vice-president Southern Railway, 1896 to 1903; vice-president Interurban Traction system, New York, 1903 to 1906. Mr. Gannon is now president of the Norfolk and Southern Railroad, Atlantic and Southern Railroad, Virginia and Carolina Coast Railroad, Pamlico, Oriental and Western Railroad, and chairman of the board of directors of the Raleigh and Pamlico Sound Railroad.

L. M. MONROE, SR.

L. M. Monroe, Sr. and Jr., are druggists at New Canaan, Conn. The elder Mr. Monroe, who was born December 28, 1825, was for a long time



LUCIUS M. MONROE.
New Canaan, Conn.

a telegrapher, but for many years past has been divorced from the dots and dashes, and in his present occupation fills an honored place in the

business and civic life of the town and section in which he is located.

JOHN R. VAN WORMER.

The career of John Rufus Van Wormer, who is now the secretary and general manager of the Lincoln Safe Deposit Company, of New York,



JOHN R. VAN WORMER.
New York, N. Y.

affords another illustration of the evolution of the telegraph operator into the successful business man. Mr. Van Wormer was born March 14, 1849. His entry into the telegraph service began in 1863, at Adams, N. Y., for the Montreal Telegraph Company. Between that date and December, 1877, he was employed by the Western Union Telegraph Company at various points within the state of New York, when he became private secretary to George B. Sloane, speaker of the New York Assembly. From Albany he went to Washington as secretary to United States Senator Roscoe Conkling, serving also as clerk of the senate committee on commerce. Later Mr. Van Wormer became confidential man to Thomas L. James, postmaster of New York, afterwards accompanying the same, in 1881, to Washington as secretary, when Mr. James entered the cabinet as Postmaster-General. Mr. James subsequently made his secretary chief clerk of the department, a position he held during the famous "star route" revelation. Returning to New York he accepted the position of teller in the Lincoln National Bank, later becoming secretary and general manager of the Lincoln Safe Deposit and Warehouse Company, and vice-president of the Brooklyn Warehouse and Storage Company. Mr. Van Wormer was secretary of the Union League Club, 1893-94; is president of the New York Athletic Club, serving the present term, 1900 to 1907, and is also president of the Holland Society of New York, 1906. He is a frequently-heard after-dinner speaker, and more than once has entertained the members of the Magnetic Club with his oratory.

GEORGE M. MYERS.

George M. Myers, a retired capitalist, of Kansas City, Mo., and a telegrapher of former years, was born in New York, November 25, 1855. He began his telegraphic life at Berea, O., when he entered the service of the Lake Shore and Michigan Southern Railroad in 1870. Believing that a better opportunity awaited him further west he went to Kansas City in 1875, where he became an employee of the Western Union Telegraph Company, later being associated with the Atlantic and Pacific and the American Union telegraph companies, as manager of the latter, and afterwards as manager of the Mutual Union Telegraph Company. In the meantime he had served as Western Union manager at St. Joseph, Mo. Mr. Myers was the prime mover in effecting the organization of the Pacific Mutual Telegraph Company, a most ambitious scheme for gridironing the Far West with the telegraph. Remarkable progress had been made in advancing the interests of this company, when it was leased to the Bankers and Merchants, and Mr. Myers was made a district superintendent. Financial trouble overtaking this company, Mr. Myers was appointed receiver of



GEORGE M. MYERS,
Kansas City, Mo.

all lines west of St. Louis, a trust he executed with remarkable fidelity, paying all obligations. The Pacific Mutual again came into possession of its own, Mr. Myers becoming general manager, resigning in May, 1887, on the transfer of the property to the Postal Telegraph-Cable Company. Mr. Myers has since been active in successfully promoting numerous important undertakings, by which he has acquired large wealth.

WALTER C. HUMSTONE.

Walter C. Humstone, who resides in Brooklyn, N. Y., where he is vice-president of the Hamilton Trust Company, besides being financially interested in other enterprises, was born at Esopus, N. Y., June 1, 1849. Like many another who have afterwards acquired distinction in the

telegraph service, he began his telegraphic career as a messenger at Poughkeepsie, N. Y., in 1862, in the office of the Hudson River Railroad Company. In 1869 he was appointed manager of the Brooklyn office of the Western Union



WALTER C. HUMSTONE,
Brooklyn, N. Y.

Telegraph Company. Later he became superintendent in New York of the Atlantic and Pacific Telegraph Company; in 1875 he was made manager, at Chicago, of the company's lines west of Buffalo, and in 1879 was advanced to the position of general superintendent. Toward the close of 1880, at the instance of Gen. Thos. T. Eckert, he rendered important service, both in Europe and America, in behalf of the American Cable Company. In 1881, when Gen. Eckert became general manager of the Western Union Telegraph Company, Mr. Humstone was called to the superintendency at New York, a position held by him until his retirement from the telegraph service in 1902, after giving to the telegraph business forty years of his life.

CHARLES A. TINKER.

Charles Almerin Tinker, of Brooklyn, N. Y., holds an honored name in the annals of telegraphy. Born at Chelsea, Vermont, January 8, 1838, he learned telegraphy at Northfield in his native state in the office of the Vermont and Boston Telegraph Company, in 1852. After three years' service as an operator he succeeded to the management of the office. Going thence to Boston, and elsewhere, he finally went west to Chicago, where in January, 1857, he became an operator for the Illinois and Mississippi Telegraph Company. Other changes occurred, and in October, 1861, Mr. Tinker became an operator of the United States Military Telegraph service in the War Department at Washington, afterwards being detailed as an army operator at the front, and later, by recall, being appointed chief operator and cipher operator at the War Depart-

ment. He succeeded to the management of the office, finally closing up the affairs of the military telegraph. In 1865 he was appointed manager of the Western Union Telegraph Company, Washington, resigning in 1872 to become superintendent of telegraph and general train despatcher for the Central Vermont Railway, at



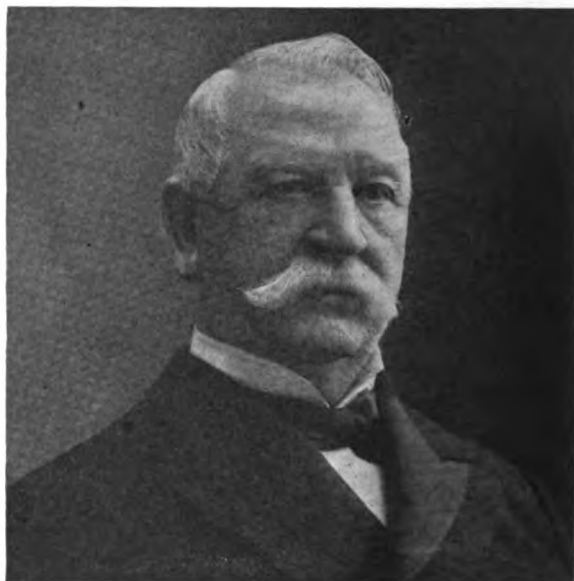
CHARLES A. TINKER,
Brooklyn, N. Y.

St. Albans, Vt. In 1875 he accepted the appointment of general superintendent of the Central and Pacific divisions of the Atlantic and Pacific Telegraph Company, at Chicago. This company becoming merged with the Western Union, in January, 1879, Mr. Tinker received the appointment of superintendent of telegraph of the Baltimore and Ohio Railroad Company at Baltimore. In this position he became one of the incorporators with the late Jay Gould and David H. Bates, of the American Union Telegraph Company, with which the Baltimore and Ohio Railroad Company became allied. In 1881, when the Western Union Telegraph Company absorbed the American Union, the former tendered to Mr. Tinker the general superintendency of the Eastern division, New York, the duties of which position he entered upon February 1, 1882. He retired from the telegraph service May 1, 1902.

GENERAL THOMAS T. ECKERT.

General Thomas Thompson Eckert, now of New York, the only living ex-president of the Western Union Telegraph Company, and now chairman of its board of directors, holds an honored name and place in the history of the telegraph in this country. He was born in St. Clairsville, O., April 23, 1825, and although living a life of great activity and carrying heavy responsibilities, he still maintains, even at his advanced years, a firm mien and a carriage and deportment showing natural strength of body and of mind. It was as long ago as 1848 that General Eckert first acquired an operating knowledge of telegraphy. His telegraphic experience throughout his earlier

years, gained in the West, was a varied one. His opportunity came with the breaking out of the Civil War, for in that year of 1861 he was placed in charge of the military telegraphs at the headquarters of General McClellan, afterwards becoming superintendent of the Military Telegraph Department of the Potomac, with the rank of Captain and Assistant Quartermaster. In September, 1862, he established the military telegraph headquarters in the War Department with the rank of Major. His duties brought him into intimate contact with President Lincoln and Secretary of War Stanton, and he frequently was called upon to execute many important and delicate secret missions in behalf of the government, including at one time a meeting with certain leaders of the Confederacy at City Point. The abilities of General Eckert were never questioned.

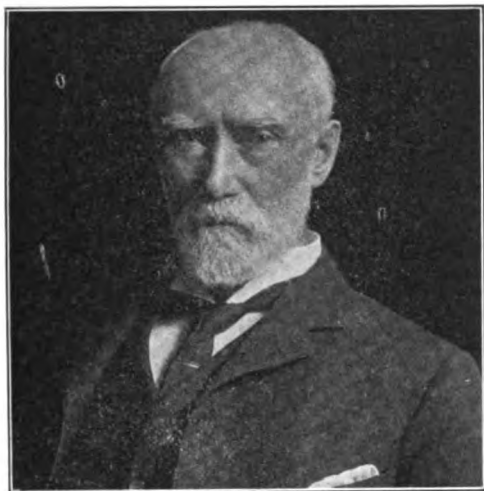


GEN. THOMAS T. ECKERT,
New York, N. Y.

and his good judgment, positive and forceful character, earned for him the confidence of those by whom he was surrounded. In 1864, Major Eckert was brevetted Lieut.-Colonel, and soon after Brigadier General. The same year he was appointed Assistant Secretary of War, a position he held until August, 1866, when he resigned to accept the office of general superintendent of the eastern district of the Western Union Telegraph Company. From this position General Eckert resigned to accept on January 14, 1875, the presidency of the Atlantic and Pacific Telegraph Company, which was followed on January 1, 1880, by his becoming president of the American Union Telegraph Company, holding the same until the merger with the Western Union Telegraph Company, of which he was made general manager, succeeding in 1892, on the death of Dr. Norvin Green, to the presidency of the company. In 1902 he retired, since which time he has held his present position.

HARVEY P. DWIGHT.

Harvey P. Dwight, president of the Great North Western Telegraph Company, Toronto, Ont., who is one of the best known representatives of the telegraph in America, is a native of New York State, having been born in Jefferson County, December 23, 1828. He has served Canadian telegraphic interests for so long a time that he has come to be known affectionately across the border as the "Father of Canadian Telegraphy." He began his telegraphic career under Mr. Orrin S. Wood, as an operator of the Montreal Telegraph Company, first at Belleville in 1847, and later in Montreal, thence going to Toronto in 1849, where subsequently he became general western superintendent of the line. When the Dominion and Montreal telegraph companies were merged into the Great North Western Telegraph Company in 1881, Mr. Dwight was appointed general manager of the united companies. Shortly after this he was elected vice-president and in 1893, president. On many occasions Mr.



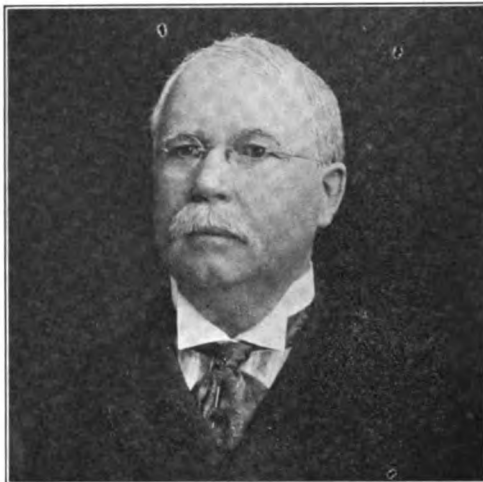
H. P. DWIGHT.
Toronto, Ont.

Dwight has rendered services of the utmost importance to the government of his country. During the Fenian raid the distribution of operators along the frontiers where the trouble existed or was threatened was placed in his hands, and by this means the government was in a position to act with a knowledge and promptness which would otherwise have been totally lacking. During the northwest rebellion in 1885 he also rendered signal service to the government along similar lines, his service in this connection having been publicly acknowledged in Parliament by the minister of militia.

PATRICK B. DELANY.

Patrick B. Delany, a former telegrapher, and the well-known inventor of telegraph apparatus, is a resident of South Orange, N. J. He was born in Ireland, January 28, 1845, and was considered a good operator at the age of sixteen at

Hartford, Conn. He had a fine reputation, especially as a receiver, and displayed much ability in copying press from twenty to twenty-five words behind the sender. Always of an inventive turn of mind, he continued to serve various tele-



PATRICK B. DELANY.
New York.

graphic interests, even dropping into the field of journalism, until 1880, when he decided to give his entire attention to inventing. He has been most prolific in this respect. His mind is a highly practical one, and whatever he has produced has been of a useful character. Probably over one hundred and fifty patents have been obtained by him, representing almost every branch of electrical science, but mainly devoted to telegraphy. His anti-Page relay, anti-induction cables and synchronous multiplex telegraphy are among the most prominent. His multiplex system was adopted by the British postoffice in 1885, and is now in use in Great Britain. Cable telegraphy has claimed his skill, and he has produced several forms of transmitters, automatic and manual, all of a character to increase speed in sending. His greatest work, perhaps, is his rapid automatic system, by which it is possible to transmit 1,000 or more words per minute on a single wire. Of late Mr. Delany has devoted more attention to telegraphic transmitting devices and has brought to great perfection keyboard machines for all branches of Morse telegraphy land lines, cables and wireless telegraphy. He has also invented automatic dot-making devices, mechanical and electric, the best known of which at present is the "Auto-Dot" transmitter. During the past three years Mr. Delany has been experimenting with wireless telegraphy at Nantucket, Mass., where he has reared a wireless pole 130 feet high on his farm "Derrymore."

WILLIAM R. PLUM.

William R. Plum, of Lombard, Ill., now retired, was born at Massillon, O., March 24, 1845. He entered the telegraph service as an operator at

Atwater, O., in 1860, afterwards serving the Cleveland and Pittsburg Railroad at Cleveland, and in 1861 became a member of the United States Military Telegraph Corps at Columbia, Ky. He saw much active service in the early years of the Civil War in the states of Kentucky and Tennessee, a portion of the time being chief operator in charge of the telegraph line between Nashville, Tenn., via Fort Donaldson, to Paducah, Ky. Later he was with Gen. Thomas at Atlanta, Ga., at which point he became manager and also chief operator at headquarters. At the close of the war he entered the Yale law school at New Haven, Conn., and while there he became night manager of the telegraph office. Graduating in 1867 he practiced law in Chicago, until 1903, when he retired from the active practice of his profession. Mr. Plum was one of the organizers of the Society of the United States



W. R. PLUM.
Lombard, Ill.

Military Telegraph Corps, of which he served as president from 1881 to 1898, and is the author of a history of that organization during the war period. He was also one of the organizers of the Old Time Telegraphers' Association, and wrote its constitution, also holding the office of president for one term.

B. F. WOODWARD.

B. F. Woodward, who is now in the real estate business at Denver, Colo., an old-time telegrapher, was born at Newark, O., June 25, 1834. His service in the telegraph dates from 1850, when, at sixteen years of age, he was given the position of copyist in the office of the National Telegraph Company, made up of three independent corporations, of which the late James D. Reid was superintendent of all three. From Philadelphia Mr. Woodward went to Pittsburg, at which point later he became local manager of the Western Union Telegraph Company. During the early period of the Civil War, Mr. Woodward became

identified with the United States Military Telegraph service, doing duty at the front in Virginia. He resigned in the spring of 1863, and in the following fall engaged in the construction of a branch line from Galesburg to Denver of the



B. F. WOODWARD.
Denver, Colo.

Pacific Telegraph Company. On October 10 Mr. Woodward opened the Denver office. A few years later he was made division superintendent of the Western Union Telegraph Company, a position he held for a number of years. Subsequently, and for a dozen years, or more, he became superintendent of telegraph of the Denver and Rio Grande Railway. Mr. Woodward organized the United States and Mexico Telegraph Company and built the line from Denver to Santa Fe, although projected to the City of Mexico. It was afterward sold to the Western Union. Mr. Woodward expresses a lively interest in the welfare of the old-timers and the United States Military Telegraph men, in both organizations of which he is a member.

DENNIS J. HERN.

Dennis J. Hern, of Boston, Superintendent of Street Lighting, that city, and who was actively engaged as a telegrapher up to 1902, was born in Boston August 19, 1854. At ten years of age he became a messenger for the United States Telegraph Company, in his native city, in which, indeed, he has been a lifelong resident. Two years later his first promotion came, boy that he was, when he was made line repairer and battery man. During the years from 1868 to 1871 he served several different telegraph interests, until in 1872, he was appointed inspector of the city line department of the Atlantic and Pacific Telegraph Company. In 1875 he was made manager of the local office. This was followed in 1877 by his advancement to the position of superintendent of the lines of the same interest between Boston and New York. In 1879 Mr. Hern was made superinten-

dent of the Mutual Union Telegraph Company, with jurisdiction covering the lines between Bangor, Me., and New York, holding the place until 1896. At the same time, covering the years 1880 to 1883, he also became general manager of the Eastern Telegraph Company, Boston to Bangor; also general manager of the Mutual District Messenger Company of Boston from 1882 to 1902. This latter enterprise was a personal undertaking of Mr. Hern's, and in its furtherance he secured a ten-year contract with the Mutual Union Telegraph Company, an arrangement which was also continued with the Western Union until 1902, when Mr. Hern left the telegraph and messenger service to accept the position of Commissioner of Health of the Port of Boston. His term of four years expired in May last, when he was appointed to his present office



D. J. HERN,
Boston, Mass.

with the understanding that he should effectually reorganize the street lighting department, which sadly needed attention.

WILLIAM T. GENTRY.

William Thomas Gentry, of Atlanta, Ga., a former well-known telegrapher, and now prominent in telephone circles at the South, was born at Gordonsville, Va., April 14, 1854. He entered the telegraph service at Charlottesville, Va., October 1, 1871, becoming an operator for the Southern and Atlantic Telegraph Company. In 1874 he was promoted to be circuit manager, covering the first division of that company. The absorption of the company by the Western Union Telegraph Company took Mr. Gentry into the employ of the latter at Wilmington, N. C., where later, and also at Alexandria, Va., he filled the positions of manager. Leaving the telegraph for the telephone in 1884, he accepted the management of the Atlanta telephone exchange of the Southern Bell Telephone and Telegraph Company. Since that time Mr. Gentry's advancement in the telephone service of this company has been steady. From the general man-

agement, to which he was elected in 1900, he was elected vice-president in 1902. In addition to this office he is also either president or vice-president of a number of subsidiary companies



WM. T. GENTRY,
Atlanta, Ga.

located in North Carolina and Virginia. Mr. Gentry is a man who has had large experience in nearly every department of the telephone business, and has constructed exchanges and toll lines, installed central office equipment and erected buildings. Besides this he has secured numerous patents covering various improvements in telephone apparatus. Notwithstanding the fact that Mr. Gentry is a very busy man, he finds time to occasionally attend the meetings of the old time telegraphers, in whose association he still retains his membership, for his friendships among telegraphers are both numerous and cordial.

JAMES H. NICHOLS.

James Hervey Nichols, of Denver, Col., formerly a well-known telegrapher, whose service throughout the Civil War in the United States Military Telegraph Corps affords a most interesting record, is now in the real estate business. Yet, despite the engrossing cares incident to the conduct of the large interests in which he is engaged far removed from the scenes of earlier life, he remains loyal in his affections for the old timers and the military telegraphers and says: "I am proud to know that they have made such valuable citizens and have taken a prominent part in making history for America. Mr. Nichols was born in Chester, O., January 19, 1843, entering the telegraph service at Granville, O., in 1859. Early in 1861, while serving at Pittsburgh as chief operator of the first division of the Pittsburgh, Fort Wayne and Chicago Railway, he became a member of the United States Military Telegraph Corps, July 7 of that year, serving until December, 1865, during which time he was stationed in the War Department, and in the field with leading generals. He gives this thrilling account: "I was at Grant's headquarters at Appomattox at the time of Lee's sur-

render, where I saw Generals Grant and Lee enter the McLain house, there remaining about half an hour. During that eventful half hour the terms of surrender were arranged. General John Gibbon received the actual surrender of the army of Northern Virginia, and I was assigned to him as operator with tent and office in the front yard of the McLain house, and witnessed the details carried out. It was a very solemn occasion. The only cheering that I heard during the act of surrender occurred when General J. B. Gordon brought up his division to be paroled, and to receive passes, the cheers coming from his own comrades, who desired to show their esteem for their brave commander. On the first day of the surrender I saw General Seth Williams, adjutant general of the Army of the Potomac, and General Pickett of the Confederate Army, meet on the steps of the McLain house; they rushed into each other's arms,



J. HERVEY NICHOLS.
Denver, Col.

hugged and kissed each other, while the tears ran down their cheeks. They had been classmates at West Point. I realized then that the war was over. I was ordered to Lynchburg, where I found eight Confederate operators waiting to surrender to somebody." From Lynchburg Mr. Nichols was ordered to Richmond, and after a few months was directed to take charge of the Petersburg, Va., office, which did the repeating for the Southern States. When the Government turned over the lines to the Western Union he remained as manager at Petersburg until September, 1867, when he was transferred to Denver, Col., then a town of 3,000 inhabitants, and not a railroad within two hundred miles of it. Subsequently he became manager at Cheyenne of the repeating office for the overland business, reaching that point by the first passenger train arriving there. Here he remained until 1876, when he abandoned telegraphy, removed to Denver to engage in other business and where he has since resided.

JOSEPH UHRIG.

Joseph Uhrig, of Chicago, a former telegrapher, who has been successfully engaged in the marble and granite business in the western metropolis since 1889, is a Marylander, having been born in Baltimore, February 6, 1854. His entry into the



JOSEPH UHRIG,
Chicago, Ill.

telegraph was as a messenger at Chicago. Mr. Uhrig as a boy was the possessor of the same type of energy that has brought him success in later years, for his upward progress in the telegraph service was rapid, carrying him in quick succession to the positions of chief clerk and finally to that of assistant superintendent.

JOHN A. PAYNE.

John Adams Payne, of Cincinnati, a former well-known Associated Press operator from



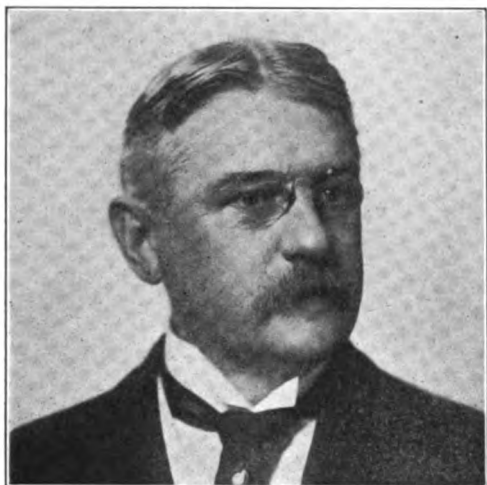
J. H. PAYNE,
Cincinnati, Ohio.

1885 to 1887, in Nashville, Tenn., where he was born March 4, 1860, and where he entered the

telegraph service, is now the vice-president of the Interstate News Bureau, Cincinnati, which controls a leased wire system of nearly 6,000 miles. Mr. Payne introduced the use of the typewriter in connection with telegraphy in 1885 in the Nashville "American" office, and such was the success of the innovation that subsequently he visited New York, Philadelphia, Washington, Pittsburg, Cincinnati, Chicago, St. Louis and other Associated Press points, in company with Superintendent A. C. Thomas, for the purpose of demonstrating the feasibility of receiving press reports by typewriter, it being considered at that time an impossibility. Mr. Payne is a very successful business man, and enjoys a wide acquaintance in telegraph circles in every section of the country.

EDWARD W. MCKENNA.

Edward W. McKenna, who is now the second vice-president of the Chicago, Milwaukee and St. Paul Railway Company, at Chicago, was originally a railway telegrapher. He was born at Pittsburg, Pa., in 1848, and entered the railway ser-



E. W. MCKENNA,
Chicago, Ill.

vice of the Pennsylvania Railroad as messenger in May, 1862, afterwards becoming an operator. From June, 1864, to August, 1865, during the closing year of the Civil War, he served in the United States Military Telegraph Corps, a portion of the time on the military railroads in Virginia. Leaving the government service and returning to railroad work, from the positions of operator, freight clerk and general superintendent's clerk for the Cleveland and Pittsburg Railway, at Pittsburg his promotions in railway employ have been steady. He had a year at train despatching, then became superintendent of the Indianapolis and Vincennes railroad from 1871 to 1880, thence in like capacity, to 1885, serving the interests of the Jeffersonville, Madison and Indianapolis road. Other railroad positions were filled by him with ability and credit until October 31, 1895, when he

retired from all railroad connection to engage in the business of renewing steel rails under an invention of his own of a process for securing that result, organizing for the purpose the McKenna Steel Working Company of which he was the president for a number of years. From February 1, 1904, to September 23, 1905, he was the assistant to the president of the Chicago, Milwaukee and St. Paul Railway, on the latter date being elected to his present office of second vice-president.

WILLIAM T. LEWIS.

William Turnor Lewis, of Racine, Wis., a former well-known telegrapher, now extensively engaged in manufacturing, was born at Utica,



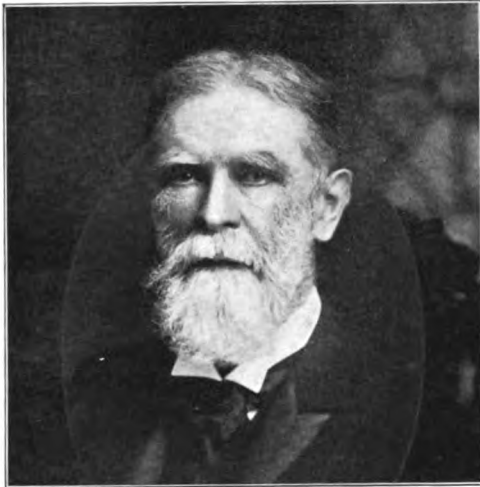
W. T. LEWIS,
Racine, Wis.

N. Y., March 10, 1840. Early in life, locating at Racine, he entered the telegraph service at that point in 1859. In later years, however, abandoning telegraphy, he branched out into other avocations and organized and was president of the Badger Electric Company, of the Mitchell and Lewis Company, Mitchell Motor Car Company, all of Racine; vice-president of the Great Northern Implement Company of Minneapolis, Minn., and president of the Yucca Cyanide Mining and Milling Company, of Cedar, Arizona. He also organized and was president of the Anti-Contract Convict Association, the object of which was to prevent states leasing their convicts in competition with honest or outside labor. He is still active in business, and as all of his undertakings were successful he has become a man of large means.

W. A. M. GRIER.

Wm. Alex. Montgomery Grier, of Brooklyn, a retired former telegrapher, is a native of Danville, Pa., where he was born December 9, 1833. He entered the telegraph service in the town of his birth when, in March, 1850, the telegraph first reached that place. For several months he had charge of the local office, and then as the

line was extended westward to Milton, Williamsport, and eventually to Bellefonte, he installed the instruments and instructed operators at those places. Later he moved the office of the Philadelphia and Wilkes Barre Telegraph Company at Wilkes Barre and instructed the operators. His active telegraph career covered a period of about three years. He entered Lafayette College in 1853, and after graduation in 1856 he became teller of the Danville Bank. In 1863 he organized and became cashier of the First National Bank of Danville, and in 1867 be-



W. A. M. GRIER,
Brooklyn, N. Y.

came managing partner of Pardee, Markle and Grier, bankers, at Hazelton, Pa. In 1882 he went to New York, where for several years he was president of a manufacturing company. Mr. Grier, while a resident of Hazelton, was sent as a delegate to the Republican national convention at Chicago in 1880, and to him belongs the honor of nominating General Garfield to the presidency.

J. FRANK HOWELL.

The subject of this sketch, Mr. J. Frank Howell, banker and broker at No. 66 Broadway, New York city, was born in Elizabethtown, Kentucky, March, 1859, and, after a short tuition under the skilful guidance of Mr. Joseph S. Wilson, at Morrisonville, Illinois, was launched forth as a telegrapher by Chief Despatcher J. M. Walker, at Homer, Ill., on the Wabash Railway. As Mr. Howell puts it, after a few years' experience among friends the business seemed so easy that he became uneasy and wandered away from the reservation, as it were, and into what might have been a more frigid climate, but for the timely intervention of Mr. George W. Stevens' interception and placing him with the Grand Rapids and Indiana Railway, at Fort Wayne, Ind. After a few brief months at the latter place he was promoted to the president's office of the same company at Grand Rapids, Mich. While in the

latter city, Mr. Howell formed a liking for commercial telegraphy and was given a position with the North Western Telegraph Company in Milwaukee. Discerning the Eastern Star from the "famous city," Mr. Howell set forth for New York, where, after an engagement with the Western Union and American Union telegraph companies, he transferred his services for the last named company to St. Louis, and later worked westward to San Francisco, thence back to Ogden, Chicago and New York, where he has put in most of his time up to ten years ago, when he became a member of the New York Consolidated Stock and Petroleum Exchange, of which he is one of the Governors, receiving the largest num-



J. FRANK HOWELL,
New York.

ber of votes cast at the last election. Mr. Howell probably conducts a business second to none in volume on the Exchange named, and what is most gratifying is that his word of mouth is his bond, as attested to, in and since the Northern Pacific panic, when failures of others dragged him down to the extent of fifty thousand dollars, and his friends and legal advisers suggested bankruptcy; but he said, "No, if given a chance, I will pay dollar for dollar, regardless of whether the others come to life or not,"—and he did.

Mr. Howell owns a beautiful estate of twenty-six acres in Englewood, N. J., where he lives in the full enjoyment of the beauties of nature. He has the reputation of being a good amateur whip and is a familiar figure on the road behind his

trotter, pacer or tandem. Mr. Howell's love for the telegraph is shown in the significant remark: "Go to the telegraph bureau for futurity talent."

The Word "Telegraphone."

Recently TELEGRAPH AGE made editorial mention respecting the meaning and the misuse of the word "Telegraphone." It appears to have attracted considerable attention.

The Electrical World, of New York, has this to say:

"The subjoined item from TELEGRAPH AGE is timely and pertinent. The growth of the art is creating many difficulties of this character. For example, the new Cahill electric music system speaks of its wonderful apparatus as the 'telharmonium' and the 'dynamophone'; and it is evidently casting around for new and appropriate terminology. The Age says: 'The misuse of the word 'telegraphone' is apt to create wrong impressions as to its true meaning, and consequently lead to confusion and error. For instance, the term as it is generally employed in this country, especially in railroad and telegraph circles, where, indeed, it is most frequently met with, applies in brief to a telephone circuit attached to an ordinary telegraph line. In Europe, on the other hand, and even to a certain extent here in America, an understanding of the word is held to denote the device of Poulsen, which is, as a matter of fact, no more or less than a form of phonograph or graphophone, for the instrument records speech on a metal band. As the definition of the word now coming more freely into usage is so diverse in meaning, it would seem that a change might properly be made by the adoption of a new title for one form of interpretation.' The American Institute of Electrical Engineers might do worse than appoint a committee on electrical terms and phrases, for purposes of standardization."

In England, the London Electrician reprints the article and says: "In this country the word 'telegraphone' is not likely to cause much confusion, but in America the word is in more general use, so that there is good reason for the protest by TELEGRAPH AGE."

The American Institute of Electrical Engineers is a competent body to adjust phraseology adaptable to the electrical arts, and we quite agree with the suggestion emanating from the Electrical World in this respect.

Competitive Growth of Telephone and Telegraph.

Some interesting figures have been compiled recently in Boston, as to the relative earning powers of telegraphy and telephony. In the ten years ended December 31 last the toll and long-distance service of the American Telephone Company and its sub-companies increased from \$4,000,000 gross to \$30,000,000, a gain of \$26,000,000, or 650 per cent. In the same period the gross business of the Western Union Telegraph Company in-

creased \$6,815,626, or 3.6 per cent. During these ten years, however, the Western Union has had to meet the sharp rivalry of the Postal Telegraph-Cable Company.

Mayor McClellan and Municipal Ownership Abroad.

Mayor McClellan of New York, who has been in Europe for the past three months looking over the subject of municipal ownership returns to this city a firm believer in corporate management. The London Electrician says: "He has come to the conclusion that much of Europe's vaunted municipal superiority is a delusion and a snare. Germany apparently is the country where it is vaunted most of all, but where Mr. McClellan has failed to find any success. On the contrary, he has found conditions in cities like Frankfort and Dresden, having their own tramways, which no American community of even second-rate importance would tolerate. Not only is the traffic of these places insignificant to an American, but it is badly handled. The conditions in England, according to Mr. McClellan, are even worse than on the Continent, with the possible exception of Glasgow. He is of the opinion that the result of the Tramways Act of 1870 has been the 'perpetuation of old fogysm and the stunting of private enterprise,' and he is more than ever convinced that municipal operation is the last desperate means, which ought to be resorted to only when private enterprise has absolutely failed."

Personal Mention.

Mr. D. H. Bates, the veteran telegrapher, is to contribute to the Century Magazine an article on "Lincoln in the Telegraph Office." During the war, as a young operator, Mr. Bates was very close to Mr. Lincoln and enjoyed his confidence.

Mr. George G. Ward, vice-president and general manager of the Pacific Commercial Cable Company, New York, who left Yokohama, Japan, on the steamer Mongolia on September 9, as reported in our previous issue, is on Midway Island, the Mongolia having run on a reef off that island on September 15. He is expected to leave October 1 on the company's repair steamer, Restorer. Mr. Ward is accompanied by his wife and his daughter, Mrs. Hough. Midway Island is one of the repeating stations in the Pacific of the Commercial Pacific Cable Company.

"Modern Practice of the Electric Telegraph," although not a new publication, nevertheless fully maintains its value as an excellent technical handbook for electricians, for telegraph managers and for operators. The fact that numerous editions of the book have been issued proclaims its intrinsic worth. The author, the late Franklin Leonard Pope, was a former president of the American Institute of Electrical Engineers, a member of the Institution of Electrical Engineers of London, an old-time telegrapher, and a writer of marked ability. The volume embraces 234 pages, has 185 illustrations and is fully indexed. Price, \$1.50, postpaid. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

LETTERS FROM OUR CORRESPONDENTS.**PHILADELPHIA, WESTERN UNION.**

Mr. V. G. Hudgins, who has been identified with this company for a number of years in various capacities, principally as a very successful branch office manager, has resigned to become manager of the office at Raleigh, N. C.

The following changes have recently taken place among the branch offices: J. R. Kettler, manager of the Vine street office promoted to be manager of the Produce District office, vice V. G. Hudgins; E. F. Bradford, of West Philadelphia, succeeds Mr. Kettler; W. E. Maloy, Mr. Bradford, and Miss Clara Shaw, Mr. Maloy.

The resignations of J. J. Buck, L. E. Philips, and Louie Eisenberg, branch office managers, were accepted and their places filled by the appointment of J. M. Lucy, vice Buck; McBurt, vice Philips, and Edward Miller, vice L. Eisenberg.

J. Edwards is back from Oil City and once again has become a member of the operating force.

CHICAGO, POSTAL.

Following the course of change involved by a number of important promotions of late in this office, Mr. F. Y. Churchill, in charge of the claim department, has been appointed electrician, Mr. Richard Ahlers succeeding to the vacancy thus created.

Ninety-one regular extra and extra operators were transferred to regular tricks September 15.

Mr. George Doerr, Eastern traffic chief, who has been seriously ill for some time, is reported to be improving.

Mr. A. S. Kennedy, timekeeper, is away on his vacation, visiting relatives in Kansas.

Mr. R. W. Daniels, who was in charge of the annunciator board, has resigned, accepting an appointment with the Burlington Railroad as a wire chief.

Fred Buecking has been assigned to the annunciator board.

NEW YORK, WESTERN UNION.

The following have returned from summer offices: Misses M. Kingstrom, Kate Meyers, Mamie Coen, A. McMurtry, Kate Mahoney, Clara Ayers, Bertha Wilson, Mamie E. Hopkins, and Messrs. S. Oakes and Ed. Mesler.

Mr. Clappitt, Eastern night chief, is absent on his vacation.

The following details were made during the recent State Convention: To Buffalo: Messrs. Lovegrove, McIntyre, Smearer, St. Clair, Biggins, Bradford, C. M. Egan, Miss McGillis, with R. J. Murphy in charge. To Saratoga: Messrs. G. Hoyt, Van Valen, G. Barton, J. J. Wilkinson, Haden, Moffatt, Gaffney, Freber, with F. R. Johnson in charge.

The following have been assigned to assist The Associated Press: At Troy, N. Y., C. E. Barto; at Amsterdam, N. Y., A. Moore; at Auburn, N. Y., J. Mendelson; at Ithaca, N. Y., E. F. Fischer; at Poughkeepsie, N. Y., J. C. Sullivan.

Mr. Thomas Devine, assistant chief operator at Boston, who accompanied the Harvard crew to London, Eng., paid us a visit while en route home.

William Burns, night Western chief, died suddenly September 23. He had worked up to 3:30 A.M., and was on the way to his home in Brooklyn when death overtook him.

Robert C. Edwards, formerly of this office, died September 13 at his home in this city, the burial being at Cypress Hill.

A. M. Fancell has been appointed junior operator and stenographer.

Miss Agnes Sullivan has resigned to accept a position with the Long Island Railroad Company.

Charles Pearsall has been appointed record clerk, vice J. P. Cronin appointed operator.

C. A. Kilfoyle, financial secretary of the Telegraphers' Aid Society, is spending a vacation of two weeks in Sullivan County, N. Y.

OTHER NEW YORK ITEMS.

Local 16 of the Commercial Telegraphers' Union of America, at its recent meeting, elected Joseph F. Ahearn president. The new executive board of the local contains J. F. Burke, Edward F. Fagan, James A. Griswold, H. A. Green, A. S. Hughes, E. R. Henderson, George Kearney, J. I. Marsh and C. V. Snow. R. M. McLennan and George H. Wiser are the vice-presidents; C. P. McInerney is secretary-treasurer, and P. O. Purcell is recording secretary.

Mr. John K. Green, employed in broker and commercial offices in New York for the past twenty years, has gone to Boston where he will hereafter reside.

Mr. Daniel C. Donohue, Jr., late of the Postal executive offices, has accepted a position as stenographer and private secretary to A. S. Thweatt, eastern passenger agent of the Southern Railway, New York.

Mr. Jim Brown, manager at the Marconi wireless telegraph station, Sea Gate, Coney Island, N. Y., has returned from Siasconset, Mass., whither he has been stationed since his return from Europe on September 1.

Assessment No. 454 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of James Y. Borden, at Asbury Park, N. J.; Cambridge R. Tracy, at Wheeling, W. Va.; Clinton L. Hoff, at Albany, N. Y., and George Flowers, at St. Louis, Mo.

New Telegraph Headquarters at Baltimore of the Baltimore and Ohio Railroad Company.

The Baltimore and Ohio Railroad Company at Baltimore moved its telegraph office to its new quarters in its handsome fourteen-story office building September 8. The move was begun at 8 A.M., and by 5 P.M. the old office at Camden Station was abandoned. The new office is said to be one of the best and handsomest in the country owned by a

corporation. The operating room is located on the mezzanine floor and is about 75 feet in depth by 50 feet wide, ventilated by automatic ventilators, regulated by two electrically connected thermometers. The switchboard is on the Western Union style, two sections at the head of the room. There are six large tables, giving working room for forty-eight operators. Current for the different circuits is furnished by the Western Union Telegraph Company, except the local sounder circuits, and this is furnished by a small dynamo in the cellar with an auxiliary storage battery plant.

The principal cities worked with direct are: Duplex to Newark, quadruplex to Grafton with Wheeling, Cleveland, Lorain, Benwood, and several other points on the first side. Quadruplex to Pittsburg, with half a dozen different points on the first side. Single wires to Cleveland, Cincinnati, Chicago, Garrett, Ind.; Wolf Lake, Cumberland, Connellsville, Washington, D. C.; Philadelphia, New York, Jersey City, and way wires.

The office is handsomely finished, red mahogany being used in the trim. Light is furnished by forty 100-candle power ceiling incandescent lamps. The office furnishings are unusually fine. In the center of the room there is a double cabinet, where the different forms are kept. Underwood typewriters are furnished the men by the railroad company. At one end of the room is a pneumatic tube station connecting with each floor.

The telegraphic staff is made up as follows. Charles Selden, superintendent of telegraph; E. W. Day, assistant superintendent; F. G. Adams, division operator; G. D. Ward, chief operator; W. H. Hoffman, night chief; G. W. Buckman, all night chief; W. Quinn, day wire chief; E. S. Wyandt, night wire chief; Louis Wehage, day traffic chief; Lester Robinson, night traffic chief.

The Lansingburg, N. Y., Test Office.

The Lansingburg (Troy), N. Y., station of the American Telephone and Telegraph Company is undergoing some extensive changes, made necessary by the rapidly increasing number of wires entering that station. The test room, which has become crowded, is being enlarged to twice its present size. Three sections of test board are to be added, increasing the capacity to 480 wires. Two sections of the latest type of Morse board will replace the one now in use. The new board will have a capacity of forty Morse circuits. The number of single Morse repeaters is to be increased to thirty sets. Provision will also be made for three duplex sets. The storage battery plant will be considerably enlarged and a motor-generator added.

Lansingburg is an important junction point between New York and Montreal, Boston and the west. Business for Saratoga, Plattsburg, Montreal and the Adirondack region passes through that office. The Adirondack broker wires are repeated there. One of the repeaters on the Bos-

ton-Omaha telephone circuit is also located there. This is probably the longest telephone circuit in daily service.

The wire chief's department, where all the Morse circuits are handled, is in charge of S. H. Riker, wire chief; C. J. Korndorfer, assistant wire chief; G. M. Rutherford, and A. T. Crounse, test board men; W. I. Bradshaw, wire chief's clerk; T. W. Geary, inspector, and J. L. Harrington, assistant inspector.

T. C. Devine in the Role of Mascot.

The Harvard crew which lately rowed a race with the Cambridge men, in England, was supposed to possess several mascots, according to the London Daily Chronicle. Writing on the subject a reporter of that journal had this to say:

"The other mascot is chubby-faced, but slightly older—Mr. T. C. Devine, assistant chief operator of the Western Union Telegraph Company, of Boston, Mass., and no less. The only reason for his appearance in this quiet Thames village that I have been able to discover is that for sixteen years he has gone with Harvard to New London, which is also on the Thames (U. S. A.), for their annual contests with Yale. He is a tradition of Harvard, without being a back number. He is a part of the outfit, an offset against training orders, in which tobacco and even lager beer are ruled out. Mr. Devine has done feats in war telegraphy which are talked about in the States. But he is here only because Harvard like him, and feel they would not be happy without his presence to remind them of American conditions. He is a mascot, like "Jimmy" Wray, Hart, their boatman, their "shell" itself, and the newspaper men who have come over with them to keep America informed as to their progress."

The United Engineering Building in New York city, which will be the permanent home of the American Institute of Electrical Engineers and other engineering societies, is now enclosed and roofed, with partitions in place, all risers in position and some elevators running. Foundations were carried down in some cases 67 feet to secure a hard rock footing.

A telegrapher who is meeting with popularity is John H. Hannan, of Malden, Mass., station agent since 1889, of the Boston and Maine Railroad at that point, a well known railroad man of New England, who has just been elected president of the International Railroad Agents' Association of the United States, Canada and Mexico. He is forty-six years of age, is a member of the Boston and Maine agents' association, also of the relief association of that road, besides holding the presidency of the Railroad Agents' Association of New England. He began his telegraphic career at Malden in the employ of the Western Union Telegraph Company.

OTHER NEW YORK NEWS.

Mr. Joseph F. Ahearn, president of Local 16, Commercial Telegraphers' Union of America, has been nominated for State Senator in one of the New York City districts.

The James Kempster Printing Company, 117 Liberty street, this city, which does the printing for the Western Union Telegraph Company, was partially destroyed by fire on the morning of October 23.

Assessment No. 455 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the death of Kenneth McKenzie at New York; James H. F. Walker, at Atlanta, Ga.; Alfred S. Brown, at New York, and Sylvester J. Tinsman at Washington, N. J.

Great preparations are being made for the coming entertainment and reception of the New York Telegraphers' Aid Society, which is to be held at the Lexington Avenue Opera House and Terrace Garden, Fifty-eighth street, near Third avenue, Wednesday evening, November 14. The event this year will mark the twenty-sixth anniversary of the society and the officers and various committees are working industriously to make the affair a success. Mr. R. J. Marrin, chairman of the entertainment committee, being especially active in advancing its interests. The proceeds of this entertainment are for the benefit of the relief fund of the society.

George J. Gould, who is a great admirer of the game of baseball, gave a dinner Thursday evening, October 25, at the New York Athletic Club, to the Missouri Pacific Baseball Club, in honor of its long score of sixteen victories, with only one defeat, as the record of the season. The membership of this club embraces employees of the Missouri Pacific, Wabash, Iron Mountain and Southern railroads, Western Union Telegraph and other companies dominated by the Goulds and having headquarters in the Western Union Building, at No. 195 Broadway. Mr. Gould was not present, but W. A. Hamilton, a relative, acted as toastmaster, and M. J. O'Leary, secretary of the Telegraphers' Mutual Benefit Association, was chairman.

At the thirty-second annual convention of the American Bankers' Association, held at St. Louis, October 16 to 19, inclusive, Collin Armstrong, treasurer of the New York News Bureau; Henry Meyers, manager of the Hamilton Press, and E. W. Kimmelberg, also of the news bureau, were in attendance for the purpose of demonstrating to the delegates thereto the practical features of the bulletin service of the New York News Bureau in furnishing important financial and commercial news of the day to its subscribers. Items of such character were transmitted to St. Louis by special wire during the days of the convention and distributed on printed slips. The news of this service, the largest of its kind in the United States, is published daily, afternoons, in The Wall Street Summary, New York.

As has already been announced, the Magnetic

Club, of New York, will hold its next reunion at the Hotel Astor, on Wednesday evening, November 21, at half past six o'clock, the occasion being the customary event of the fall dinner. Active preparations are going forward to make this an attractive affair, and while it is yet too soon to announce positively the names of all who will speak on the occasion, it is stated that several well-known after-dinner spellbinders will be present and contribute by their oratorical efforts to make the function one of much enjoyment.

A funny spectacle was witnessed in New York City during the strike of the messenger boys in the financial district a few days ago, when one of the youngsters, who was making a speech from the steps of the sub-treasury, informed his admiring listeners that the president of the company where he worked was a "skin" and had been dealing "hot air" out to them long enough; what they wanted was free uniforms, more money and less "chin music."

The Electrical Trades Exposition Company will hold its second annual electrical show at the Coliseum, Chicago, January 14-26.

The National District Telegraph Company of Minneapolis, a subsidiary company of the American District Telegraph Company of New Jersey, has purchased the American District Telegraph Company of Minneapolis.

[Advertising will be accepted to appear in this column at the rate of three cents a word, estimating nine words to the line.]

For Sale.—A new Yetman transmitting typewriter; practically has never been used; \$70. W. C. Graves, 210 Girard Trust Building, Philadelphia, Pa.

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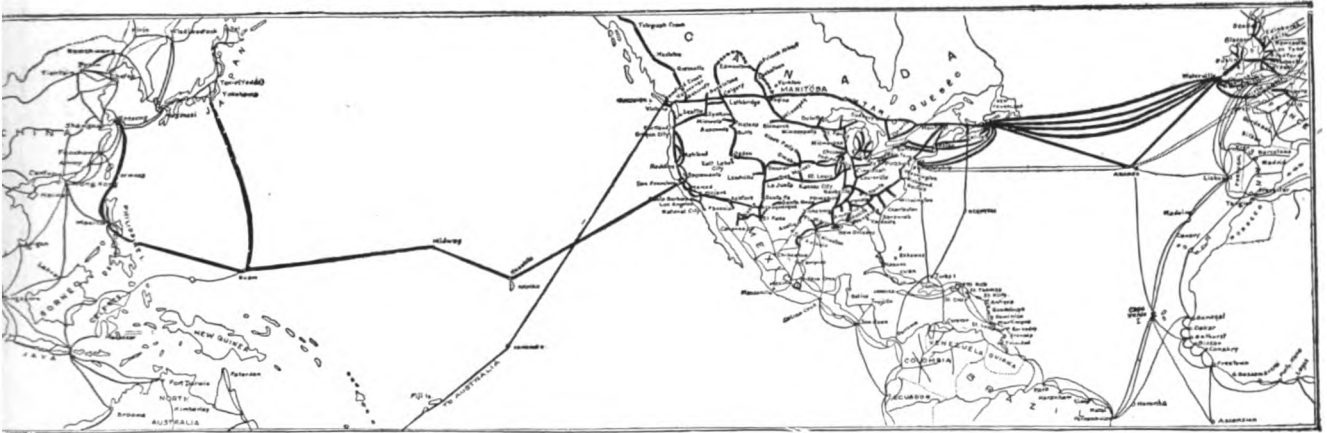
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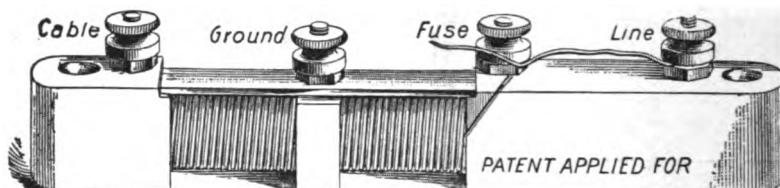
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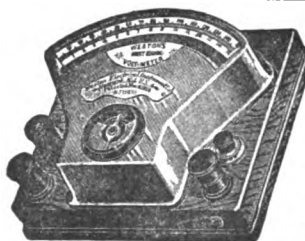
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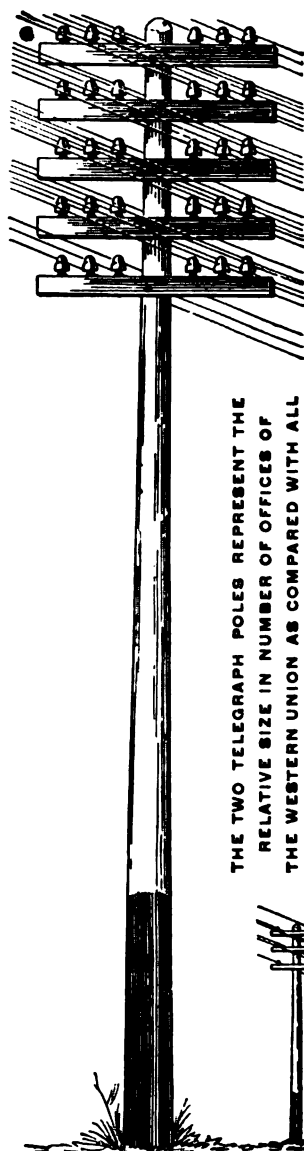
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TELEGRAPH AGE

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SOME POINTS ON ELECTRICITY.

Conductivity Measurement by the Three-Wire Method.

BY WILLIS H. JONES.

While conductivity measurement by the three-wire method is a very old form and in almost daily use in most of the larger telegraph offices, the younger members of the profession are constantly seeking information regarding the formula or order of procedure.

The purpose of using three wires in the operation is principally to enable us to make calculations by means of a metallic circuit, and thus avoid earth currents and other foreign influences which interfere to a great extent with accurate results. Of course, this method can only be employed between stations possessing in common a number of available wires. For the benefit of laymen we herewith work out an example and accompany the same with such information as will explain the operation.

Suppose, for illustration, we select three wires extending between the testing office A, and a distant station B, one of which trio is the wire we desire to measure for conductivity. Call these wires No. 1, No. 2 and No. 3, respectively.

First I, ask Station B to loop Numbers 1 and 2, Then loop the same two conductors together at the testing station also. These two connections create a metallic circuit; that is to say, a cir-

cuit possessing no connection with the earth whatever. Now connect the galvanometer and wheatstone bridge apparatus in the circuit in the usual manner and make a note of the combined resistances of Numbers 1 and 2 conductors as indicated by the rheostat.

Next throw out No. 2, and loop Numbers 1 and 3 at both stations in the same manner and measure that circuit. Then connect Nos. 2 and 3 together and proceed as before. Having made a note of each measurement, add the three results together and divide the sum by two, because each wire has now been measured twice. The actual total resistance of the three wires singly is, of course, just half the sum of the three loops formed by pairing the conductors.

Now let us suppose that Numbers 1 and 2 looped show 3,000 ohms; Numbers 1 and 3 looped show 4,000 ohms, and Numbers 2 and 3 looped show 5,000 ohms, thus making a total of 12,000 ohms. Dividing 12,000 by two, gives us 6,000 ohms, the actual total resistance of the three wires.

To ascertain the resistance of either or all of the trio in turn subtract the ascertained resistance of any two wires looped from 6,000 and the remainder will represent the resistance of the wire omitted.

Thus to ascertain the resistance of wire No. 1, subtract the result obtained when Numbers 2 and 3 were looped, from 6,000. This leaves 1,000 as the ohmic resistance of the omitted No. 1 conductor. Numbers 1 and 3 looped gave 4,000 ohms, which amount, taken from 6,000, shows that wire No. 2 possesses 2,000 ohms. In like manner Numbers 1 and 2 looped gives 3,000 ohms, leaving 3,000 as the resistance of No. 3.

FLASHING OF CARBON FILAMENT IN ELECTRIC LIGHT LAMPS.

A Southern correspondent, among other questions, asks:

Why is it necessary for the carbon filament in incandescent electric light lamps to first go through a process called "flashing" before they are considered to be in first class condition, and how is it done?

It is necessary to flash a new carbon in order to render its resistance and diameter perfectly uniform throughout its entire length. The word "flash" was probably suggested as a fitting term to describe the operation owing to the glow or flash of light that appears first at the weak or thin portions of the filament when a current of electricity is first forced through them during the process.

Now, these filaments when first constructed, although moulded and cut with great care, sel-

dom possess strictly uniform resistance. It requires the accurate aid of chemistry to perfect them. When a current of electricity flows through a thin strip of carbon, light will not appear until the volume of current becomes a certain value over and above a certain carrying capacity. A thin filament will obviously not be able to carry as great a volume of current without overheating the conductor as a thicker strip would. The rule applies with equal force to a single filament possessing unequal diameters at different points in its linear dimensions. Taking advantage of this knowledge, the flashing or perfecting of the filament is very simple.

A comparatively feeble current of electricity is first passed through the lamp filament, placed in a bath of carbon vapor, and gradually increased in volume until a glow or light appears at some point in the carbon. This first manifestation of light will indicate the point of least diameter. The development of heat at this point causes the vapor to immediately deposit a coating of carbon thereon, which action increases the carrying capacity of the filament at the weakest point due to the resulting enlarged conductor at that point. As soon as the glow disappears the volume of current is again increased until the next weakest spot is found and chemically coated in the same manner. This process is repeated until each fractional portion of the filament has been treated and gives out an equal illumination with one and the same volume of current. While it takes considerable time to explain the process, the operation of flashing itself requires but very little.

During a recent period of wet foggy weather, when the resistance of the quadruplex circuits, as indicated by the rheostats, became very low, the fact seemed to strike several laymen about the same time that the balance showed actually less line resistance than the two quadruplex sets alone contained. In their perplexity they formulated the following question for the writer to explain:

"If each quadruplex set in the circuit contains 1,400 ohms resistance, counting that of the two 400-ohm relays and 600-ohm battery lamp at each end, or 2,800 ohms in all, disregarding that of the line conductor itself, how is it that a 'balance' will sometimes show but 2,000 ohms and often less?"

While the ohmic resistance of the line and apparatus as indicated by the balance may at first seem wrong, if the reader will stop and think for a moment he will find that the solution of the problem is very simple.

The value of the resistance contained in the rheostat simply represents the "joint resistance" of the quadruplex circuit, apparatus, conductor and all the numerous "leak" circuits via the wet poles to the earth. Each leak may possess a resistance many times greater than that of the multiplex circuit, but several of them at each wet pole may mean thousands in all, and thereby

create a joint resistance which will cause the legitimate circuit to have an apparent resistance of but 2,000 ohms or less. Of course, the reader should understand that the actual resistance of the conductor and apparatus do not alter in value, no matter what the weather may be.

Recent Telegraph Patents.

A patent, No. 836,307, for a circuit-controlling keyboard apparatus, has been issued to Patrick B. Delany, of South Orange, N. J. The method operates to send electric impulses at a rate which will operate an electromagnet instrument and to repeat the impulses reversely at a rate which will not operate the instrument.

A patent, No. 836,454, for a telegraph key, has been obtained by Edward M. McConihay, of Lewiston, W. Va. Automatic means are placed adjacent to the button of the key lever for preserving normally unbroken circuit through the key and occupy a plane below the top of the button. The means are operative to break circuit only by an uplifting force considered with reference to the base.

A patent, No. 836,936, for a temporary telegraph station, has been taken out by Charles S. Maynard, of Chardon, O., assignor of one-fourth to John Maynard and one-fourth to W. B. Treat, Cleveland, O. A cross-connection contains an instrument between two line wires, one line wire being open in one of the established stations, the other line wire being open in the other of the established stations.

Municipal Electricians.

A patent, No. 415,578, for a fire-alarm-telegraph repeater, held by F. A. Skelton, of Newton, Mass., has expired.

Mr. F. C. Mason, formerly superintendent of Police Telegraph of Brooklyn, N. Y., who recently retired on pension to his country place, Glen Alex Farm, at Washington Mills, N. Y., has been called to act as electrical expert by the Corporation Council's office of the Borough of Brooklyn. Mr. Mason will make his headquarters at Glen Alex Farm, his presence in New York only being necessary during the trial of important suits in which the city is interested.

Recent New York Visitors.

Mr. George W. Hann, an old time telegrapher, well known in New York and other sections of the country, for the past five years president of the Holbrook Company, Savannah, Ga.

Aristippus, being asked what were the most necessary things for well born boys to learn, said, "Those things which they will put in practice when they become men."

Personal Mention.

Mr. Wm. Maver, Jr., an old-time telegrapher, and electrical expert, has an instructive article in the December issue of *The Review of Reviews* on "The Electrification of Steam Railways".

Mr. W. H. Sawyer, a retired wire manufacturer of Providence, R. I., and a former old time telegrapher, has gone to Pasadena, Cal., as is his custom, where he will spend the winter.

Mr. Harvey Williams, a well known Philadelphia broker operator, was recently elected Master of Perkins Lodge, 402 of that city. Mr. Williams is regarded as one of the finest telegraph operators in the United States, and if he makes as good a worshipful master of Masons as he does a master of the telegraph key, the brethren of his lodge will have much to be thankful for.

The Cable.

Mr. W. J. Fraser, superintendent of the Direct Cable Company, at Boston, Mass., accompanied by his wife, was a recent New York visitor.

Hugh Latham, secretary of the Pacific Cable Board, London, Eng., was thrown from his horse while out hunting recently, and died from the injuries received.

Governor Magoon of Cuba, has ordered prepared a decree, which will permit the Commercial Cable Company, on December 6, to enter Havana, by way of Vedado from Key West.

Mr. Herbert Kingsford, superintendent of the Central and South American Telegraph Company, at Lima, Peru, who was in New York recently, has gone to England in the interest of the service where he will remain for six months.

Cable communication is interrupted with:

Venezuela.	Jan. 12, 1906.
Messages may be mailed from Curacao or Trinidad.	
Pinheiro "via Cayenne"	Aug. 13, 1902.
Canary Islands:	
Island of Palma	July 12, 1906.
Steamer from Teneriffe	
Island of Lanzarote	Sept. 18, 1906.
Steamer from Las Palmas	
French Guiana	Nov. 26, 1906.
Mail from Paramaribo.	

So great has been the success of the Government telegraph lines in Alaska that it probably will become necessary to extend the duplex now working between Seattle and Sitka to the Sitka-Valdez section, in order to take care of the prospective heavy rush of business next summer. Reports reaching the chief signal officer show that in some instances the receipts during the past few months have exceeded by 100 per cent., and in many instances 50 per cent., those of a corresponding period last year. At present this system comprises a seventeen-hundred-mile stretch from Seattle to Valdez via Sitka, and fourteen

hundred miles of land lines, terminating in a one-hundred-and-ten-mile wireless jump from St. Michael to Nome, the extreme point westward. It is possible that Congress will be asked to authorize the expenditure of the telegraph receipts toward extending the system this year from Fairbanks to Circle City. The cable ship Burnside is now at work extending a branch from the Juneau-Sitka cable down to Wrangell and Ketchikan, an important point, in the estimation of the chief signal officer, for reporting shipping.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. W. K. Frank has been appointed manager at Jeanette, Pa., vice Miss Ruth Caldwell, resigned.

Mr. Louis Eisenberg has been appointed manager at New Castle, Pa., vice Miss E. R. Fitch, resigned.

Mr. W. W. Wagoner, manager of the office at Muncie, Ind., has been appointed manager at Terre Haute, Ind., vice P. L. Mounce, as already announced in this column, made manager at Indianapolis, Ind. Mr. Ralph E. Scorch, manager at Bedford, Ind., has been appointed manager at Muncie, vice Mr. W. W. Wagoner, promoted.

Mr. J. F. Reade, who has been appointed manager of the office at Denver, as announced in our previous issue, succeeding A. A. Gargan, is a Canadian, but has been a resident of this country since he was twenty-one years of age, since which time he has been mainly in the employ of the Western Union company. He went to Colorado in 1894, first going to Cripple Creek, afterwards becoming wire chief at Colorado Springs, of which office he was subsequently made manager. It was from the latter point that he was transferred to Denver.

Mr. J. B. Norris, manager at Chattanooga, Tenn., has been transferred to the electrical department of the company, an act which may be regarded as a promotion. Approximately thirty years ago he was appointed manager at Chattanooga. After several years service in that position he resigned and undertook the life of a farmer. Soon, however, he returned to the telegraph company and was assigned to the electrical department. He succeeded to the management of the office some ten or twelve years ago, a position he had since retained. He has a practical acquaintance with electrical matters and will carry with him to his new department a mind well trained for the position. Mr. Norris has been succeeded in the managership of the Chattanooga office by the appointment of Mr. E. Chadick of Lake Charles, La.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. William Roland, chief operator of Washington, D. C., has resigned his position to enter other service.

This company has opened an office at Alexandria, La., with Mr. J. E. Pennington as manager. The office will be located on De Soto street.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

William H. Baker, vice-president and general manager, has issued a circular letter respecting the franking privilege of which the following is a part: "On account of conditions that have recently been established, free service will be discontinued absolutely on and after January 1, 1907, and no franks whatsoever will be issued thereafter. Outstanding franks will be honored until February 28, 1907.

"Telegraph service that this company is obligated to perform under contracts or reciprocal arrangements having the effect of contracts will be provided for by the issue of cards to officers and representatives of railroad companies and others who are entitled to avail of such service.

"No officer or employe of the company will be entitled to the free transmission of telegrams except telegrams relative to the business of the company. Such telegrams will be checked D. H. Co."

Among the recent executive office visitors were: Charles M. Baker, superintendent of construction, Chicago; Guy E. Paine, general superintendent, Atlanta, Ga.; G. W. Ribble, superintendent, Washington, D. C.; H. D. Reynolds, superintendent, and president of the Old Time Telegraphers' and Historical Association, Buffalo, N. Y.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Mr. W. J. Austin, cable accountant of the company, has gone to California for the purpose of meeting Mrs. Austin, who has been sojourning on the Pacific Coast for some time, and who will accompany her husband on his return to New York within the next month.

Among the recent executive office visitors was Mr. Maurice Brick, of the Washington, D. C., office. Mr. Brick is a well known old time New Yorker and twenty-five years ago was one of the chief operators in the main office in this city.

I. N. Miller, Jr., Becomes Superintendent at San Francisco.

Mr. I. Newton Miller, Jr., who has held the dual positions at San Francisco of chief clerk to Frank Jaynes, general superintendent of the Pacific division, and as superintendent of the Pacific division of the American District Telegraph Company, has been appointed superintendent of the first district at San Francisco, vice F. H. Lamb, transferred to Los Angeles, Cal. Mr. Miller was born at New Vienna, O., November 29, 1868. He has seen extended service

both in railroad and commercial employ. He first went to California, resigning the post of operator on the Fort Worth and Gulf Railroad, at Denver, to accept the appointment of private secretary to Mr. Jaynes, his promotion to be chief clerk to the latter dating from January 1, 1903, his further appointment as superintendent of the district telegraph being December 1, 1902. The growing importance of San Francisco and of the Pacific Coast in telegraph business, gives peculiar significance to the actions of the telegraph officials in establishing an additional district.

Frank H. Lamb Goes to Los Angeles.

Mr. Frank H. Lamb may be regarded in the nature of a pioneer superintendent in the service of the Western Union Telegraph Company, on the Pacific Coast. When San Francisco became headquarters of the newly created Pacific division in 1902, Mr. Lamb was appointed its first district superintendent. Now, with the creation of still another district, with Los Angeles as headquarters, Mr. Lamb has been transferred to that point, and enters upon his duties there as the company's first superintendent in Southern California. His services at San Francisco have been marked by the exercise of excellent business sense, governed by good judgment, and if the same qualities of administration are maintained at his new post, the interests of the Western Union Company should be distinctly promoted. Mr. Lamb has been succeeded at San Francisco by I. N. Miller, Jr. Mr. Lamb has had a creditable telegraphic career, begun in 1859 in the old Williamsburg section of Brooklyn, N. Y.; he is of New England origin. He served in the military telegraph branch of the army during the Civil War, was twice taken prisoner by the enemy, and in Libby Prison suffered all the horrors for which that place was noted. After the close of the war, in October, 1865, he was appointed chief operator for the United States Telegraph Company at Cincinnati, O. When this company was absorbed by the Western Union, Mr. Lamb was retained in the employ of the latter by whom he was sent to the Pacific Coast as superintendent of its lines in British Columbia. Mr. Lamb was connected with the party engaged to survey the route from British Columbia to Russia for the projected overland telegraph system to Europe, but which was abandoned by the successful completion of the Atlantic cable.

The Montreal Daily Herald of November 17 devoted a half-page to what it termed "The Witchery of Telegraphy," the article referring at length to improvements which have lately been installed by the Canadian Pacific Railroad Telegraphs. The write-up contained portraits of James Kent, the general manager; W. J. Camp, electrical engineer, and J. P. Richardson, superintendent of the Montreal division, and altogether constituted an interesting and instructive feature of the paper.

Radio-Telegraphy.

The Clark Wireless Telegraph Company of Detroit has opened stations at Detroit, Mich., and Cleveland, Ohio, and is erecting a station at Buffalo, N. Y., for commercial business.

The International conference on wireless telegraphy at Berlin, Germany, decided to adopt "radio-telegraphy" as the official name, and this name is being generally adopted by the technical press.

Announcement has been made from Copenhagen, Denmark, that Lord Armstrong has purchased the patent rights for America of the telegraph system invented by Waldemar Poulsen, the Danish engineer.

Work on a new radio-telegraph station in the Brooklyn navy yard has been started. The new building will be of brick and will cost about \$8,000. It will be equipped with two masts and will be about five times the size of the station now being used.

A result for which many have sought in radio-telegraphy is that of producing undamped electrical oscillations of fixed frequency, is a subject to which the *Electrical World* refers to editorially. A successful method of doing this would reduce the problem of tuning to a simple matter and would at the same time greatly increase the power of a given system, since it would make possible the utilization of a train of waves to actuate the receiving device, whereas with the ordinary methods where damping occurs dependence must be placed upon the energy of the first wave.

A patent issued to G. W. Packard on November 20, covers the use of the substance silicon as a means for receiving intelligence communicated by electric waves, remarks the *Electrical World*. The silicon is used either in the massive amorphous or graphitic solid form. It is pressed into good electrical contact between two good conductors, such as copper. The device is termed a "thermo-electric regenerative detector." The energy of the received oscillations is converted into heat at the high-resistance junction of the element having high thermo-electromotive force within the low resistance or metallic element, the amount of heat and consequent temperature rise being proportional to the square of the current and the resistance, according to the well-known law of Joule. This heat energy is then regenerated or converted into a direct electric current. The inventor states that he has been able to convert upward of ten per cent. of the energy of the oscillations into direct-current energy.

Mr. F. M. Barber, commander U. S. Navy, retired, now residing at Paris, in a letter to the *Electrical Review* of London, says:

"I note in your issue of November 16 a communicated article on the subject of the Wireless Telegraph Conference, in which the author states

that a proposal was sprung upon the conference by the American representatives to make ship-to-ship communication compulsory," etc.

"As an eye-witness, I beg to state that the American delegation never sprung anything on the conference. Within one week of the opening of the session, they made a declaration in favor of the fullest possible interpretation of Article III., which bore on the subject of intercommunication without regard to system. Within two weeks they put in an amendment to one of the articles of the regulations, stating specifically that they wanted communication between ship and ship to be compulsory. The president of the conference naturally did not wish to consider it, as it was not specifically set down in the protocol; but the American delegation insisted, in season and out of season, whenever there was a public opportunity, from that time on, and pointed out that in this matter we had had more experience than all the others nations together. Finally, towards the end of the fourth week, we got a vote, and the vote showed a very large majority in favor of the American idea.

"On a motion of Great Britain, it was then made an additional article to the convention in order that those in favor could sign it separately in addition, so that, as the matter finally stands, the convention proper is signed by twenty-six nations; then comes our article with its regulations, which is signed again by twenty nations. The nations not signing our article are Great Britain, Italy, Japan, Mexico, Persia and Portugal.

"The American article is the most important of the whole convention, because it is new matter. When the conference was called, it was practically a foregone conclusion that some kind of an agreement would be reached as regards ship to shore communication, and the vote for Great Britain's proposition when we finally reached it was practically unanimous.

"The preliminary conference of 1903 showed that the majority of the nations represented were in favor of ship to shore communication without regard to system. The conference of 1906 while confirming the previous one, has shown that the majority of the nations represented are in favor of ship to ship communication, but unlike the conference of 1903, there is now a convention to that effect in binding form, subject only to the ratification of the different governments."

Professor Ferdinando Lori, of the School of Engineering, Padua, Italy, is the inventor of a new arrangement or system of wireless signaling, in which a phenomenon of electro-magnetic resonance is utilized for obtaining a separation of the radio-telegraphic signs. A non-magnetic metallic wire is extended between two points, having the north and south poles of the magnet on each side of the wire near its centre. The wire is joined up to a detector of electric waves and a battery. The tension of the wire is so controlled that when vibrating freely it performs

a predetermined number n of vibrations every second. If the detector is reached by electric waves emitted from a radiator with the same frequency n —viz., by oscillatory sparks produced with a speed n per second—the electric wave detector will be influenced n times per second, and the current passing through the wire is a pulsating or alternate current having the same frequency n . The wire is in this way enabled to act as the receiver of wireless signals only if they are emitted by a series of sparks at a rate of n per second. This apparatus is therefore selective of the messages received.

A British View of the Wireless Telegraph Conference.

(From the Electrical Review, London.)

Although the text of the decisions of the International Conference, which has just concluded its labors at Berlin, has not yet been made public, it is satisfactory to learn that agreement has been arrived at upon all the substantial issues, and this without imperiling the special interests of the naval and military services of the nation. So much that is irrelevant and misleading has been permitted to appear in the public press, that it is the more important that readers who belong to the electrical profession should have a clear understanding of the scope of the conference and the matters involved in its decisions.

There are recognized by the Admiralty four different kinds of wireless work: (1) Signaling for tactical purposes to and from the ships of a squadron; (2) "long-distance signaling" over 500 miles or more, as from the wireless telegraph station at Poldhu, or the Telefunken stations at Nauen and at Vladivostock; (3) ship-to-shore signaling, or "maritime signaling," as the Admiralty call it; (4) "sea telegraphy," meaning thereby the receipt and transmission of messages to and from passengers on vessels. To these may be added two other kinds: (5) practical signaling, as practised by the army overland; and (6) ship-to-ship signaling between vessels passing one another at sea. These different applications have different aims; and it is certain that different forms of apparatus, possibly that totally different inventions, will be found best adapted to different cases. For example, it has been found—and the failures of the Marconi apparatus in Somaliland and elsewhere prove it—that for overland work, where the soil is of variable conductivity, no apparatus is satisfactory in which an earth-connection is used. On the other hand, a portable apparatus which will give perfectly good and certain signals over twenty or thirty miles overland may be totally unadapted for use on ship-board or at a coast station to signal to ships one hundred miles out at sea.

As for the secrecy which has so often been alleged to characterize one or other "system" of wireless telegraphy, every one who has worked at

the subject knows that there is no such thing in itself. Any and every system that has yet been devised pours out ethereal waves into space around the transmitter. Whether the transmitter is tuned or untuned, any appropriate receiver within range will pick up some of the waves. The use of code alphabets is the only kind of secrecy yet possible.

Interference between stations is a question for which tuning has hitherto been a partial remedy.

* * * * *

Turning to the commercial developments of wireless work, one becomes aware that things are not exactly as the Dick Swivellers of journalism (to adopt Mr. Bernard Shaw's elegant phrase) have represented them to be. In the first place, by far the largest number of wireless stations over the world, including those on shipboard, have been erected by the Telefunken Company, which now has no fewer than 628. Of these 150 are in Russia, 13 in Norway, 11 in the Argentine, 11 in Brazil, 24 in Sweden, 29 in Austria, 2 in Portugal, 14 in Spain, 2 in the Philippines, 5 in the Dutch Indies, 2 in Siam, 2 in Tonking, 2 in Peru, etc. The Marconi Company comes next; it is said to have nearly 400 stations, and, thanks to its agreement with Lloyds, it has secured those on the south coast of England, and on most of the Atlantic liners. The De Forest Company follows on, but it has not more than fifty stations outside the United States. The Lodge-Muirhead Syndicate has a smaller number, some of them in the East. As for the other American systems, those of Stonemaker, Fessenden and Stone, there are no reliable statistics. The Ducretet and Rochefort systems appear to be confined to France and Spain.

This being the state of the art, it is not surprising that in the interests of the merchant service of all nations—and the merchant service of Great Britain far outweighs all others—it has been found desirable to establish some general understanding; so that all merchant and passenger ships, on passing a station or approaching a port, might report themselves, irrespective of the particular "system" installed on the ship or at the coast station. To achieve such an international understanding has been the chief, one might say the sole, aim of the conference at Berlin.

At that conference the nations were represented solely by official delegates. No inventors were invited or sent. The three great departments—the Admiralty, the Army and the Post Office—were represented. Their delegates went out with a perfectly defined policy. The Colonial Office was consulted by the Post Office, and concurred in the British policy.

When Demaratus was asked whether he held his tongue because he was a fool or for want of words, he replied, "A fool cannot hold his tongue."

Washington Newspaper Correspondents' Copy.

BY W. H. YOUNG, WASHINGTON.

In a telegraphic career covering a period of more than fifty years, the ubiquitous press correspondents have given in considerable copy, called manuscript, that was nondescript. There are undoubtedly some "old timers" who have consumed greyish cerebral matter and endangered their prospects for a happy eternity after this life, in their endeavors to correctly determine what particular words were indicated by the pencil, or pen and ink scrawls, scratches, daubs and tortuous strokes of such brilliant and progressive journalists as Horace Greeley and John W. Forney. If the wishes made by the operators who were thus engaged were finally granted, one could easily conclude that these journalists are on the Celestial Sun, "both daily."

I recall to mind a bit of paper, on which was about one inch square of writing. After having sent from this one inch square for an hour without reaching the signature I felt that I was in the "sear and yellow leaf" of telegraphy.

Shortly my chief would be aware of this. I thought my grip was gone and the grand bounce would soon be apparent. I ran over in memory all that I could of "Adam Smith's Domestic Economy." I mapped out a line of parsimonious frugality, that I might be prepared for the disaster.

The next day by accident, I saw the story in type. It made two columns and a half of printed matter. I destroyed my economical plans and purchased a pair of spectacles that magnified 1,500 diameters, after which I had no more trouble with this advance matter.

I really believe this correspondent could copy in pen and ink "Dickens Complete Works" and the Bible from Genesis to Revelations, in the space occupied by a pin's head. He certainly merited a notice in "Disraeli's Curiosities of Literature." The students of later years had James W. Brooks, Colonel Ed. Brooks, and Hobart Brooks, whose efforts in pen and ink were as legible as the sounds are intelligible of the "Babbling Brooks."

In direct contrast to the diminutive style of writing mentioned a moment ago, there is now a member of the press corps who cannot or will not place more than two and three-eighths of a word on a piece of paper of legal cap size. He has been known, however, to write the words "Good Night" on a telegraph blank, but the "Good" and the "Night" when this occurs is always connected with a hyphen. His copy has other peculiarities. A new man (new to Washington) was once given some of this gentleman's copy. I was sitting beside the new man. After glancing at some twenty-six or twenty-seven pages of the matter, Mr. Newcomer said: "Is this a pile of Chinese laundry checks or are the boys guying me?" He

took the mass of paper, crushed it between his hands, crumpled it and dropped it in the waste. I saw his mistake, rescued the matter from the waste, smoothed, spread and read it to the new one, and The Fawatown Bugler printed its own alphabetical signature correspondent's special the next morning.

There is a new method of time saving coming into use among the correspondents. They begin a sentence, but do not finish it—a word or two, then start afresh. This mode of abbreviation is becoming more and more common every day.

The "Old Timer" is not to be outdone by any news vending story telling set on earth. Since Bishop's experiments, mind-reading has been simplified and is known now as a certain science. A press sending operator has about his person two pieces of very fine wire (spool wire). If the correspondent springs the unfinished sentence time-saver in his copy, the operator brings forth his wires, attaches one end of each wire to a wrist, the loose end of the left wrist wire is placed at the top of the first letter of the first word of the broken sentence. The loose end of the right wrist wire touches the key. Slowly move the business end of the left wrist wire to the end of the abbreviated sentence, and the key will send the sentence, just as the correspondent intended to write it.

This is well known to practical electricians but I believe expert electricians are as yet unaware of its workings.

What a great relief this would have been if the occult law of nature could have been found out in the days when McBride and some others filed specials. I have seen men in the throes of agony over his copper-plate. On one occasion it was so puzzlingly done that no one in the office could decipher it. The wretch to whose lot it fell, tied a wet towel about his brow and studied—but of no avail. Of a sudden an inspiration came! He retired to the coat-room, removed his clothing, then replaced it inversely, that is put it on inside out and upside down, came back to the table, grasped the back of a chair with his hands, threw his feet to the air, and in this position the copy became plain as day.

Laying jocularity aside, the operator has a kindly feeling for the newspaper man. Operators are ever ready with heart and hand to aid the correspondent. Operators are students of human nature. They can, without much difficulty, pick out a rising journalist.

The operator of a quarter of a century ago had different views of life than those possessed by the youthful student of to-day. At this time the profession has in its ranks men who recognize the responsibility and honor of their profession. The successful operator of to-day is intelligent, industrious, frugal, ever on the alert to keep from his door the wolf—especially Paul Wolf, who files his special written in the vernacular of the Staats readers, and transmitted from Washington by an old timer who is as familiar with the German language as is a mole with the science of astronomy.

As this ramble was begun without a commencement it will cease without peroration.

One little reminiscence and you wicked will be at rest.

Sitting beside a self-styled "expert copy reader" one evening, I heard sounds that would be decidedly out of order at a Young Men's Christian Association meeting. I turned toward him and inquired if he was ill. His reply was:

"No; but I have had my religious faith shaken. I have heretofore been of the belief that I had been on earth several times. All languages spoken and written are as plain to me as is a flaming circus poster to a small boy. Punic, Gallic, Greek, and Hebrew are bagatelle. But this sheet of paper holds signs, symbols and tokens of such a construction that there is but one way in which I can account for its presence on this earth. The inhabitants of the planet Mars, it is believed by scientists, are engaged in constant endeavors to propel signals from their world to ours. I believe they have succeeded and this is a message from Mars."

I looked at the copy. It was addressed: To—, The Sun, Baltimore, Md.

Congressional Postal Commission Resumes Its Hearings—A Unique Proposition to Run Post Office by Private Corporation.

The hearings of the Congressional Postal Commission were resumed in Washington on November 26. When the commission resumed work on Tuesday the day following, W. D. Boyce, publisher of the Ledger, the Blade and other Chicago papers, appeared with a proposition that must have made the commissioners wonder whether they were awake or dreaming. This is the substance of Mr. Boyce's offer:

To take over the post office business of the country, to be run by a \$50,000,000 private corporation under full Government regulation.

To reduce by half all postal rates, establish a rural postal express and apply business methods throughout.

To pay the Government rental for post office quarters, and charge it regular rates for its postal business.

To place in charge a well-known railroad traffic expert, to whom the place has been offered at \$30,000 annually.

To eliminate all sinecures, politics and the deficit.

To pay the Government all profits above seven per cent. on capital.

Mr. Boyce says his proposition is submitted in good faith. He did not name his associates, who will furnish the necessary capital.

"All I want is to get myself and my proposition taken seriously," he declared. "After that it will be easy, for the public wants lower postal rates. I am not the man to be making a bluff at a thing like this; I have too many interests that could be seriously injured by such a course. The backing is ready to form a corporation and

take over the postal service on the terms I have outlined.

"As the postal business is all cash-in-advance operation we have calculated that \$50,000,000 capital would be enough. Among the men associated with me in this proposal are a big advertiser, a great manufacturer, a merchant prince and a capitalist who has immense and widely divergent interests. But these men don't want to be set up to be shot at till they know whether there is a chance of the Government taking an interest in the proposal. If the Government shall indicate a friendly attitude toward us, at least a willingness to consider our scheme, they will come forward and let everybody know that there is plenty of financial backing."

[Such a proposition as that advanced by Mr. Boyce, providing for the running of the post office by a private corporation, while novel, and likely to startle some conservatives by its boldness of outline, we believe to be wholly consistent and quite within the potentialities of the future. Not only so, we believe that private parties would conduct the mail service of this country better in every way than that afforded by the Government. In our judgment, with the influence of politics eliminated and economy of management introduced, such as prevails in all corporate undertakings, a maximum of good results would follow, gratifying in the extreme to the people of this country. Existing deficits would be overcome, and we are quite willing to believe that the scheme if carried out would yield a handsome return on the investment. The idea is quite in line with that long entertained by Telegraph Age and expressed in these columns—Editor.]

An Enquiry into the British Telegraph Service.

In the House of Commons a few days since the question was asked the Chancellor of the Exchequer whether his attention had been directed to the recent return relating to the postoffice telegraph service showing that this service had been worked at a loss ever since 1872, that that loss had rapidly increased in the past few years, and now amounted to over £1,000,000 per annum; and whether he would consider the desirability of appointing a select committee to consider by what means, if any, the taxpayer could be relieved of this burden.

The Chancellor of the Exchequer said he was familiar with the return, and he was aware that the annual expenditure in respect of telegraphs largely exceeded the annual receipts. The account, however, included expenditure upon extensions of the system and other capital charges (amounting in 1904-5 to over £758,000) as well as the cost of earning current revenue. He did not think that any advantage would result from the appointment of a select committee.

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NEW YORK, DECEMBER 16, 1906.

So many telegraph managers have written to us that they desired to be represented in the holiday issue of TELEGRAPH AGE, explaining that they were unable to get their photographs to be used for illustrative purposes, in time for cuts to be made therefrom, that we have yielded to a very general request to defer the publication of the special number in question until January 1. We should be sorry to shut out any who have counted on being included in this fine issue, yet we are compelled to say, and to emphasize the statement, that any photograph received after the 22d. inst. will be too late for use. It therefore behooves our friends to make all haste possible to get their photographs to this office promptly. Our decision practically grants a two weeks' extension of time and this concession should be sufficiently appreciated to cause all to expedite the sending of their pictures to the utmost.

A Holiday Greeting.

Before another issue of TELEGRAPH AGE shall have appeared the holiday season will have come and gone. We, therefore, take advantage of this opportunity to extend to our readers the hand of good fellowship, and to wish them one and all a Merry Christmas! This we do with heartiness and in all sincerity, for in the twenty-four years this paper has been published it has established a wide circle of friends, both at home and abroad, between many of whom and ourselves deep and abiding evidences of love and respect exist, although the instances are more numerous than

otherwise that a personal meeting has never been vouchsafed.

There may be some who have dropped their names from our subscription list, because they have not always been in sympathy with our ideas, but on the other hand thousands remain who from the first have continued staunch and true to the early friendships formed years ago. Others have filled the places of those who have gone. To all such of the past and present we extend a greeting.

It is pleasant to know and feel that the great intelligent heartbeat of the fraternity is loyal and true to the journal that has stood for them, endeavored faithfully to represent them and to furnish them with telegraphic news. We believe and have always held, as a fundamental principle in life, eternal as the hills, that a quid pro quo, must be rendered by the individual to insure him advancement from lower to higher conditions. This "step by step" process cannot be ignored. We have earnestly advocated the telegraph, if not for a life work, yet in the experience it affords, as one of the best training schools to fit one for other employments in life. We believe that "honesty is the best policy," not alone between the individual and employing interests, but inversely in relation to the individual himself. For no man can afford to defraud himself by refusing or neglecting to develop the best there is in him.

We hope to serve our friends and readers conscientiously, fearlessly, and, as we believe, truthfully, advocating those principles that have distinguished our utterances in the past. We know that we have struck a responsive note in the great telegraphic body politic, and that the handclasp grows firmer and more binding with each succeeding year. The time is auspicious for progress, and progress is being made such as the world has never before known.

We are thankful for the good wishes so frequently expressed of late for this journal by our readers. We are not insensible to what they say, and it is a source from which to draw courage and inspiration for the future. Once again we salute and greet our readers and wish for them the best that their lives can provide.

Postal Stock Offered to Employees.

Employees of the Postal Telegraph-Cable Company are to be given an opportunity to purchase stock in that corporation on the installment plan. The stock, which is preferred, will be sold on a basis of \$69 a share, and under the installment plan employees can pay \$19 in cash and the balance at the rate of \$5 a month. Many of the men are able to save considerable money, and the company believes that investments made in its stock will tend to increase the interest of the employees. The managers think that employees who become shareholders will prove more efficient, and display an increased desire to promote the welfare of the concern of which they are part owners.

EXAMPLES, OR DIAGRAMS, WHICH ACCOMPANIED PROF. MORSE'S ORIGINAL APPLICATION FOR A PATENT.

Example 1st

1st For Numerals.

1st male ; 2nd male ; 3rd male ; 4th male ;
 2nd male ; 3rd male ; 4th male ; 5th male ;
 3rd male ; 4th male ; 5th male ; 6th male ;
 4th male ; 5th male ; 6th male ; 7th male ;

Example 2nd

For Compound Numerals.

Showing the Numerals combined together

1st male ; 2nd male ; 3rd male ; 4th male ; 5th male ; 6th male ; 7th male ; 8th male ; 9th male ; 10th male ;

Example 3.

2nd For Letters.

1st male ; 2nd male ; 3rd male ; 4th male ; 5th male ; 6th male ; 7th male ; 8th male ; 9th male ; 10th male ;

The System of Type.

Fig 1. Example 4th. 1st For Numerals.

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2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 24

The Original Morse Patent Covering the Invention of the Telegraph.

A great milestone was passed in the pathway of the world's progress when the system of the telegraph was invented by Prof. S. F. B. Morse. How thoroughly the master mind of the electric telegraph grasped the complex subject he was introducing for the benefit of mankind, is shown by the fact that he had thought out and evolved from all that had gone before, practically a finished system, so that during all the years of subsequent use and extension no material change of method has successfully challenged Prof. Morse's plan as originally devised. To present a fac-simile of the original patent awarded Prof. Morse, together with the drawings accompanying the same, will be to interest a wide circle of our readers. It is given herewith:

UNITED STATES PATENT OFFICE.

Samuel F. B. Morse, of New York, N. Y.

Improvement in the Mode of Communicating Information by Signals by the Application of Electro-Magnetism.

Specification forming part of Letters Patent No. 1,647, dated June 20, 1840.

To all whom it may concern:

Be it known that I, the undersigned, Samuel F. B. Morse, of the city, county, and State of New York, have invented a new and useful machine and system of signs for transmitting intelligence between distant points by the means of a new application and effect of electro-magnetism in producing sounds and signs, or either, and also for recording permanently by the same means and application and effect of electro-magnetism any signs thus produced and representing intelligence transmitted, as before named, between distant points; and I denominate said invention the "American Electro-Magnetic Telegraph," of which the following is a full and exact description, to wit:

It consists of the following parts: first, of a circuit of electric or galvanic conductors from any generator of electricity or galvanism, and of electro-magnets at any one or more points in said circuit; second, a system of signs by which numerals and words represented by numerals, and thereby sentences of words as well as of numerals, and letters of any extent and combination of each, are communicated to any one or more points in the before-described circuit; third, a set of type adapted to regulate the communication of the above-mentioned signs, also cases for convenient keeping of the type, and rules in which to set and use the type; fourth, an apparatus called the "straight port-rule," and another called the "circular port-rule," each of which regulates the movement of the type when in use, and also that of the

signal-lever, fifth, a signal-lever which breaks and connects the circuit of conductors; sixth, a register which records permanently the signs communicated at any desired points in the circuit; seventh, a dictionary or vocabulary of words, to which are prefixed numerals for the uses hereinafter described; eighth, modes of laying the circuit of conductors.

The circuit of conductors may be made of any metal—such as copper or iron wire or strips of copper or iron, or of cord or twine, or other substances—gilt, silvered, or covered with any thin metal leaf properly insulated and in the ground, or through or beneath the water, or through the air. By causing an electric or galvanic current to pass through the circuit of conductors laid as aforesaid by means of any generator of electricity or galvanism to one or more electro-magnets placed at any point or points in said circuit, the magnetic power thus concentrated in such magnet or magnets is used for the purposes of producing sounds and visible signs, and for permanently recording the latter at any and each of said points, at the pleasure of the operator, and in the manner hereinafter described—that is to say, by using the system of signs which is formed of the following parts and variations, viz.:

Signs of numerals consist, first, of ten dots or punctures, made in measured distances of equal extent from each other, upon paper or any substitute for paper, and in number corresponding with the numeral desired to be represented. Thus one dot or puncture for the numeral 1, two dots or punctures for the numeral 2, three of the same for 3, four for 4, five for 5, six for 6, seven for 7, eight for 8, nine for 9, and ten for 0, as particularly represented on the annexed drawing, marked Example 1, Mode 1, in which is also included a second character, to represent a cipher, if preferred.

Signs of numerals consist, secondly, of marks made as in the case of dots, and particularly represented on the annexed drawing, marked Example 1, Mode 2.

Signs of numerals consist, thirdly, of characters drawn at measured distances in the shape of the teeth of a common saw by the use of a pencil or any instrument for marking. The points corresponding to the teeth of a saw are in number to correspond with the numeral desired to be represented, as in the case of dots or marks in the other modes described, and as particularly represented in the annexed drawing, marked Example 1, Mode 3.

Signs of numerals consist, fourthly, of dots and lines separately and conjunctively used as follows, the numerals 1, 2, 3 and 4 being represented by dots, as in Mode 1, first given above: The numeral 5 is represented by a line equal in length to the space between the two dots of any other numeral; 6 is represented by the addition of a dot to the line representing 5; 7 is represented by the addition of two dots to said line; 8 is represented by prefixing a dot to said line; 9

is represented by two dots prefixed to said line; and 0 is represented by two lines, each of the length of said line that represents the number 5. Said signs are particularly set forth in the annexed drawings, marked Example 1, Mode 4.

Either of said modes are to be used as may be preferred or desired and in the method hereinafter described.

The sign of a distinct numeral or of a compound numeral when used in a sentence of words or of numerals consists of a distance or space of separation between the characters of greater extent than the distance used in separating the characters that compose any such distinct or compound numeral. An illustration of this sign is particularly exhibited in the annexed drawing, marked Example 2.

Signs of letters consist in variations of the dots, marks, and dots and lines, and spaces of separation of the same formation as compose the signs of numerals, varied and combined differently to represent the letters of the alphabet, in the manner particularly illustrated and represented in the annexed drawing, marked Example 3.

The sign of a distinct letter, or of distinct words when used in a sentence, is the same as that used in regard to numerals and described above.

Signs of words, and even of set phrases or sentences, may be adopted for use and communication in like manner under various forms, as convenience may suggest.

The type for producing the signs of numerals consist, first, of fourteen pieces or plates of thin metal—such as type-metal, brass, iron or like substances—with teeth or indentations upon one side or edge of ten of said type, corresponding in number to the dots or punctures or marks requisite to constitute the numerals, respectively, heretofore described in the system of signs, and having also a space left upon the side or edge of each type, at one end thereof, without teeth or indentations, corresponding in length with the distance or separation desired between each sign of a numeral. Another of said type has two indentations, forming thereby three teeth only, and without any space at either end, to correspond with the size of a cipher, as heretofore described by reference to Example 1, Modes 1, 2, 3, of drawings in said system of signs. One other of said type is without any indentation on its side or edge, and being in length to correspond with the distance or separation desired between distinct or compound numerals, and with the sign heretofore described for that purpose. One of the remaining two of said type is formed with one corner of it beveled, (system of type, Example 4, Fig. 1,) and is called a “rest;” and the other is in a pointed form and called a “stop.”

Each of said type is particularly delineated on the annexed drawing, marked Example 4, Fig. 1, and numbered or labeled in accordance with the

purpose for which they are designed respectively, and are used in like manner for producing each of the several signs of numerals heretofore described in the system of signs.

The type for producing the signs of numerals consist, secondly, of five pieces or plates of metal, first described above, four of which are the same as are numbered 1, 2, 3, and 4 in the annexed drawing, marked Example 4, Fig. 1, and the fifth one being the same as is denominated in the same example “the long space,” and heretofore alluded to; also, of six other pieces or plates of said metal, varied in indentations and teeth and spaces, as represented on the annexed drawing, marked Example 4, Fig. 2, to produce signs of the denominations described in the fourth mode of the above-mentioned system of signs, Example 1.

The type for producing the signs of letters are of the same denomination with those used in producing signs of numerals, and only varied in form from one to twenty-three, as exhibited in the annexed drawing, marked Example 5.

The type for producing both signs of numerals and signs of letters are adapted for use to either a straight rule, called the “straight port-rule,” and are in that case made straight lengthwise, as described in the drawings annexed, and heretofore referred to in Example 5, or to a circular port-rule, in which case they are lengthwise circular or formed into sections of a circle, as represented in the drawings annexed, marked Example 6, Figs. 2 and 3, and as will be further understood by the descriptions hereinafter contained of the straight and circular port-rules. On the under side of the type for the circular port-rule (which type are of greater thickness than those for the straight port-rule) is a groove (system of type, Example 6, A in Figs. 1 and 3) about midway of their width, and in depth about half the thickness aforesaid, and extending from the space ends, as B, Example 6, Fig. 3—that is, the ends without indentations—of said type, along the length, and conforming to the curve thereof, to a point, D D, equal in distance from the opposite ends to half the width of the pointed teeth cut upon their edges. For a delineation of these type reference is made to sections thereof in Figs. 1 and 3 upon the annexed drawings, marked Example 6.

The type-cases are wood or of any other material, with small compartments of the exact length of the type, for greater convenience in distributing, and resembling those in common use among printers.

The type-rules are of wood or metal or other material that may be preferred, and about three feet in length, with a groove, into which the type, when used, are placed. On the under side of each type rule are cogs, by which they are adapted to a pinion-wheel having corresponding cogs and forming part of a port-rule. The type-rule in use is moved onward as motion is given to the said wheel. A delineation of the

type-rule is contained in the annexed drawing, marked Example 7.

The straight port-rule consists of a pinion-wheel (before mentioned) turned by a hand-crank attached to a horizontal screw that plays into the cogs of the pinion-wheel, as the latter do into the cogs of the type-rule, or by any other power, in any of the well-known methods of mechanism. It is connected with a railway or groove, in and by which the type-rule, from the motion imparted to it by said wheel, is conveyed in a direct line beneath a lever that breaks and connects the galvanic circuit in the manner hereinafter mentioned. A delineation of said wheel, crank and screw is contained in the drawings hereunto annexed, marked Example 8, Figs. 1, 2, 3.

The circular port-rule is a substitute, when preferred, for both the type-rule and the straight port-rule, and consists of a horizontal or inclined wheel, Example 9, Fig. 1, A, of any convenient diameter, of wood or metal, having its axis connected on the under side of the wheel with a pinion-wheel, K, and as in the case of the straight port-rule. It is moved by the motion of the pinion-wheel, as is the type-rule in the former description. On the entire circumference of said horizontal or inclined wheel, and upon its upper surface, is a shoulder or cavity, *a*, Figs. 1, 2, corresponding in depth with the thickness of the type used, and in width, *b*, equal to that of the type, exclusive of their teeth or indentations. Near the outer edge of the surface of said shoulder or cavity are cogs *c*, throughout the circumference of the wheel, projecting upward at a distance from each other equal to one-half of the width of the teeth or indentations of the type, and otherwise corresponding in size to the width and depth of the groove D D, Fig. 4, in the under side of the circular type before described and illustrated by reference to Example 6, Figs. 1 and 3. Directly over said shoulder or cavity and cogs, and at one or more points on the circumference of said wheel, is extended, from a fixture outside of the orbit of the wheel, a stationary type-feeder, E, Fig. 1, formed of one end, *e*, and one side, E, perpendicular, of tin or brass plate or other substance, and of interior size and shape to receive any number of the type which are therein deposited, with their indentations projecting outward, as in Fig. 2, and their grooves downward, as in Fig. 4. Said type-feeder is supported from its fixture F F over the shoulder or cavity of the wheel A, before described, as to admit of the passage under it of said wheel in its circuit as near the bottom of the feeder as practicable without coming in contact therewith. The type deposited in the feeder, as before mentioned, form a perpendicular column, as in Fig. 2, the lower type of which rests upon the surface of the before-named shoulder of the wheel *b*, Fig. 2, and the cog of the wheel, projecting upward, enters the groove D D, Fig. 4, of the type hereinbefore described.

The operation of said circular port-rule in regulating the movement of the type in use is as follows: When the wheel A is set in motion the type resting immediately upon the shoulder of the wheel in the manner mentioned above, as in Fig. 2, is carried forward on the curvature of the wheel from beneath the column of type resting upon it in the stationary type-feeder by means of one of the before-named cogs coming in contact with that point D, Fig. 3, Example 6, in the groove of the type hereinbefore described as forming the termination of said groove, and which is particularly delineated at the points D D in the annexed drawing, marked Example 6, Fig. 3. As by said process the lower type in the column that is held by the stationary feeder is carried forward and removed, the next type settles immediately upon the shoulder of the wheel, and, after the manner of the removed type, is brought in contact with another cog of said shoulder within the groove of the type, and thence carried forward from beneath the incumbent column, as was its predecessor. Then follows consecutively in the same method each type deposited within the feeder so long as the wheel is kept in motion. The deposit of the type in the stationary feeder is regulated by the order in which the letters or numerals, or words they represent, are designed to be communicated at any distant point or points. After the type are respectively carried forward on the curvature of the wheel in the manner stated above beyond the point where they are acted upon by the signal-lever, as is herein-after described, they are lifted, each in its turn, from the shoulder of the wheel A and cast off into a box or pocket, G, below the wheel by means of a slender shaft or spindle, H, made of any metal, and resembling in form a common plowshare, extending downward from a fixture, *o*, placed outside of the wheel, into groove K, within the before-named shoulder of said wheel A, and on the inner side of the cogs *c*, already described. By means of said groove the downward point of said shaft or spindle H is brought within the curvature and below the surface of said shoulder *b*, Fig. 2, and consequently under the approaching end of the type, so that each type successively, as it is carried forward on said curvature in the manner before described is lifted from the shoulder and forced upward on the inclined shaft or spindle by the type in contact with it at the other end, until turned off into the before-named box or pocket G below, ready for a redistribution.

For a more particular delineation of the several parts of said circular port rule reference is made to the annexed drawings, marked Example 9, Figs. 1 and 2.

The signal-lever, Example 9, Fig. 3, consists, first, for use with the straight port-rule (Example 8, Fig. 1, A), of a strip of wood of any length from six to twenty-four inches, resting upon a pivot, *a*, or in a notched pillar formed into a fulcrum by a metal pin, *a*, passing through it and the lever. At one end of the lever a metallic wire,

bent to a semicircular or half-square form, as at A, or resembling the prongs of a fork distended, is attached by its centre, as described in the annexed drawings, Example 8, at the point marked A. Between said end of the lever and the fulcrum *a*, and near the latter, on the under side of the lever A, is inserted a metallic tooth or cog, *b*, curved on the side nearest to the fulcrum, and in other respects corresponding to the teeth or indentations upon the type already described. On the opposite extremity of the lever is a small weight, C, to balance or offset in part when needed, the weight of the lever on the opposite side of the fulcrum. The lever thus formed is stationed directly over the railway or groove D D, heretofore described as forming a connected part of the straight port-rule. The movement of the type-rule brings the tooth of each type therein set in contact with the tooth or cog of the lever, and thereby forces the lever upward until the points of the two teeth in contact have passed each other, when the lever again descends as the teeth of the type proceed onward from the tooth of the lever. This operation is repeated as frequently as the teeth of the type are brought in contact with the tooth of the lever. By thus forcing the said lever upward and downward the ends of the semicircular or pronged wire are made alternately to rise from or fall into two small cups or vessels of mercury, E E, in each of which is an end or termination of the metallic circuit-conductors first described above. This termination of the metallic circuit in the two cups or vessels breaks and limits the current of electricity or galvanism through the circuit; but a connection of the circuit is effected or restored by the falling of the two ends of the pronged wire A, attached to said lever, into the two cups, connecting the one cup with the other in that way. By the rising of the lever, and consequently the wire upon its end, from its connection with said cups said circuit is in like manner again broken and the current of electricity or galvanism destroyed. To effect at pleasure these two purposes of breaking and connecting said circuit is the design of said motion that is imparted in the before-mentioned manner to said lever, and to regulate this motion and reduce it to the system of intelligible signs before described is the design and use of the variations in the form of the type, also before described. A plate of copper, silver, or other conductor connected with the broken parts of said circuit of conductors, and receiving the contact of the wire attached to said lever, may be substituted, if preferred, for said cups of mercury. For a particular delineation of the several parts of said lever reference is made to the annexed drawing, marked Example 8.

The signal-lever consists, secondly, for use with the circular port-rule, (Example 9, Fig. 3,) of a strip of wood, G, with a metallic wire, A, at one end, of the form and for the purposes of the lever already described above. It turns on a pivot or fulcrum, *a*, placed either near the middle or in the

end of the lever. At the end of the lever, at C, opposite to the metallic wire A, an elbow, *c*, is formed on a right angle with the main lever, and extending downward from the level with the pivot or fulcrum sufficiently for a metallic tooth, H, in the end thereof, corresponding with the teeth or indentations of the type already described, to press against the type projecting from the shoulder or cavity of the wheel A, Fig. 1, that forms the circular port-rule before described. Said wheel is placed beneath the said lever, as seen at G, Fig. 1, in a position to be reached by the extremity or tooth H of the arm of the lever just mentioned. The tooth H in the arm of the lever is kept in constant contact with the type of the circular port-rule by the pressure of a spring, B, upon it, as described in the annexed drawing, marked Example 9, at B, Figs 1 and 3 in the same example exhibit sections of the said lever. The action thus produced by the contact of the teeth of the type in the port-rule when said wheel is in motion with the tooth in the arm of the lever lifts up and drops down the opposite extremity. A of said lever having the metallic wire upon it as the tooth of said lever passes into or out of the indentations of the type, and in the same manner and to the same effect as the first described lever rises and falls, and accordingly breaks and closes the circuit of conductors, as in the former instance. In the use of this circular port-rule and its appropriate lever (Fig. 3) type may be used having the points of their teeth and their indentations shaped as counterparts or reverses to those delineated in the annexed drawings, heretofore referred to and marked Examples 4, 5, and 6, and thereby the forms of the recorded signs will be changed in a corresponding manner.

The register consists—

First, of a lever of the shape of the lever connected with the circular port-rule above described, and is delineated in the annexed drawings, marked Example 10, Figs. 1, 2 and 4, at A. Said lever A operates upon a fulcrum, *a*, that passes through the end that forms the elbow *a*, upon the lower extremity of which, and facing an electro-magnet, is attached the armature of a magnet, *f*. In the other extreme of the lever, at B, is inserted one or more pencils, fountain-pens, printing-wheels, or other marking-instruments, as may be seen in the Fig 4 of example last mentioned at letter B. The magnet is at letter C in the same figure.

Secondly, of a cylinder or barrel of metal or wood and covered with cloth or yielding coating, to turn upon an axis, and occupying a position directly beneath the pencil, fountain-pen, printing wheel, or other marking-instrument, to be used as exhibited in the last-mentioned example of drawing, Fig 4, D. Two rollers, marked *b b* in said figure of drawings, are connected with said cylinder, on the upperside curvatures thereof, and being connected with each other by two narrow bands of tape passing over and beneath each, near the ends thereof, and over the intervening surface of the cylinder, in a manner to cause a

friction of the bands of tape upon the latter when in motion, as delineated in the last-named example, Fig. 4, at points marked *c c c*. The distance between said bands of tape on the rollers is such as to admit of the pencil or other marking-instrument in the lever to drop upon the intervening space of the cylinder. Near by said cylinder is a spool to turn on an axis, and marked *d* in the said figure, to receive any desired length of paper or other substance formed into slips or a continuous ribbon, and for the purpose of receiving a record of the signs of intelligence communicated. When the register is in motion, one end of the paper on said spool being inserted between the under surfaces of said two rollers, under the strips of tape that connect them and the cylinder, it is drawn by the friction or pressure thus caused upon it forward from said spool gradually and passed over said cylinder, and is thence deposited in a box on the opposite side or is cut off at any desired length as it passes from the cylinder and rollers.

Thirdly, of an alarm bell, *A*, Example 10, Fig. 5, which is struck by means of a lever-hammer, *B*, that is acted upon by a movable cog, *b*, placed upon an axis or pin, *b*, that confines it in the lower extremity of a pendulum-lever, (marked *E* in Fig. 5 of Example 10) having an armature of a magnet attached to it at *d* and acted upon by an electro-magnet, *o*, placed near it and the before-named magnet, and in the same circuit of conductors with the latter. Said cog *b* moves in a quarter-circle only, as the motion of said arm of the lever passes backward and forward in the act of recording, as hereinafter described. When forced into a horizontal position in said quarter-circle it ceases to act upon the hammer; but when moved from a perpendicular position it presses upon the projection in the end of the hammer, causing the opposite end of the hammer to be raised, from which elevation it again falls upon a stationary bell, *A*, as soon as said cog reaches a horizontal position, and ceases, as before mentioned, to press upon the hammer. Thus a notice by sound or an alarm is given at the point to which intelligence is to be communicated as soon as the register begins to act, and such sound may be continued or not, at pleasure, for the purpose mentioned, or for any other uses, as the hammer shall be suspended or not from contact with the bell or with any number of bells that may be employed. Fig. 5 of said example, marked 10 in the annexed drawings, represents sections of said hammer and bell.

Said several parts of the register are set in motion by the communication to or action upon the before-named armature of a magnet attached to the lever of the register, of the electric or galvanic current in the circuit of conductors, and from an electro-magnet in said circuit, as before described, stationed near the said armature. As said armature is drawn or attracted from its stationary and horizontal position toward the said magnet, when the latter is charged from the

circuit of conductors, said lever is turned upon its fulcrum, and the opposite end thereof necessarily descends and brings the pen or marking-instrument which it contains in contact with the paper or other substance on the revolving cylinder directly beneath it. As said armature ceases to be thus drawn or attracted by said magnet, as is the case as soon as said magnet ceases to be charged from the circuit of conductors, or as the current in said circuit is broken in the manner hereinbefore described, the said armature is forced back by its own specific gravity or by a spring or weight, as may be needed, to its former position, and the pen or marking-instrument in the opposite end of the lever is again raised from its contact with the paper or other substance on the before-named revolving cylinder. This same action is communicated simultaneously from the same circuit of conductors to as many registers as there are corresponding magnets provided within any circuit and at any desired distance from each other.

The cylinder and its two associate rollers are set in motion simultaneously with the first motion of the lever by the withdrawal of a small wire or spindle, *g*, Example 10, Figs. 2 and 5, from beneath one branch of a fly-wheel, *k*, that forms a part of the clock machinery hereinafter named. Said wire *g* is withdrawn by the action upon said wire of a small electro-magnet, *o*, Figs. 2 and 5, stationed in the circuit and near the large magnet before named, as delineated in Fig. 5 of Example 10. Said cylinder and rollers are subsequently kept in motion by a train of wheels similar to common clock-wheels, as in Figs. 2 and 3, acted upon by a weight, raised as occasion may require by a hand-crank, and their motion is regulated by the same wheels to correspond with the action of the registering-pen or marking-instrument. Said train is represented in Figs. 1, 2 and 3 of said Example 10.

The electro-magnet thus used is made in any of the usual modes, such as winding insulated copper wire, or strips of copper, or tin-foil, or other metal around a bar of soft iron, either straight or bent into a circular form, and having the two extremities of the coils connected with the circuit of conductors, so that the coils around the magnet make part of the circuit.

To extend more effectually the length of any desired circuit of conductors, and to perpetuate the power of the electric or galvanic current equally throughout the same, I adopt the following mode, and also for connecting and using any desired number of additional and intervening batteries or generators of said current, and for connecting progressively any number of consecutive circuits, viz.: Place at any point in a circuit an electro-magnet of the denomination already described, with an armature upon a lever of the form and structure, and in the position of that used at the register to hold and operate the marking-instrument, with only a substitution therein for such marking-instrument of a forked

wire, A, Example 9, Fig. 3, like that upon the end of the signal-lever heretofore described. Directly beneath the latter wire place two cups of mercury, E E, or two metallic plates joined to terminations of a circuit leading from the fresh or additional battery or generator of said circuit, in the same manner as they are to be provided in the first circuit of conductors at the points where the cups of mercury are hereinbefore described. As the current in the first circuit acts upon the magnet thus provided the armature thereof and lever are thereby moved to dip the forked wire A into the cups of the second circuit, as in the circuit first described. This operation instantly connects the break in said second circuit, and thus produces an additional and original power or current of electricity or galvanism from the battery of said second circuit to the magnet or magnets placed at any one or more points in such circuit, to be broken at pleasure, as in the first circuit; and from thence, by the same operation, the same results may again be repeated, extending and breaking at pleasure such current through yet another and another circuit, ad infinitum, and with as many intervening registers for simultaneous action as may be desired, and at any distances from each other.

The dictionary or vocabulary consists of words alphabetically arranged and regularly numbered, beginning with the letters of the alphabet, so that each word in the language has its telegraphic number, and is designated at pleasure through the signs of numerals.

The modes which I propose of insulating the wires or other metal for conductors and of laying the circuit are various. The wires may be insulated by winding each wire with silk, cotton, flax, or hemp, and then dipping them into a solution of caoutchouc, or into a solution of shellac, or into pitch or resin and caoutchouc. They may be laid through the air, inclosed above the ground, in the ground, or in the water. When through the air they may be insulated by a covering that shall protect them from the weather—such as cotton, flax, or hemp—and dipped into any solution which is a non-conductor, and elevated upon pillars. When inclosed above the ground they may be laid in tubes of iron or lead, and these, again, may be inclosed in wood, if desirable. When laid in the ground they may be inclosed in iron, leaden, wooden, or earthen tubes, and buried beneath the surface. Across rivers the circuit may be carried beneath the bridges, or, where there are no bridges, inclosed in lead or iron and sunk at the bottom, or stretched across, where the banks are high, upon pillars elevated on each side of the river.

What I claim as my invention, and desire to secure by Letters Patent, is as follows:

1. The formation and arrangement of the several parts of mechanism constituting the type-rule, the straight port-rule, the circular port-rule, the two signal-levers, and the register-lever and alarm-lever, with its hammer, as com-

binning respectively with each of said levers one or more armatures of an electro-magnet, and as said parts are severally described in the foregoing specification.

2. The combination of the mechanism constituting the recording-cylinder and the accompanying rollers and train-wheels with the formation and arrangement of the several parts of mechanism, the formation and arrangement of which are claimed as above and as described in the foregoing specification.

3. The use, system, formation, and arrangement of type and of signs for transmitting intelligence between distant points by the application of electro-magnetism and metallic conductors combined with mechanism described in the foregoing specification.

4. The mode and process of breaking and connecting by mechanism currents of electricity or galvanism in any circuit of metallic conductors, as described in the foregoing specification.

5. The mode and process of propelling and connecting currents of electricity or galvanism in and through any desired number of circuits of metallic conductors from any known generator of electricity or galvanism, as described in the foregoing specification.

6. The application of electro-magnets by means of one or more circuits of metallic conductors from any known generator of electricity or galvanism to the several levers in the machinery described in the foregoing specification, for the purpose of imparting motion to said levers and operating said machinery, and for transmitting by signs and sounds intelligence between distant points and simultaneously to different points.

7. The mode and process of recording or marking permanently signs of intelligence transmitted between distant points and simultaneously to different points by the application and use of electro-magnetism or galvanism, as described in the foregoing specification.

8. The combination and arrangement of electro-magnets in one or more circuits of metallic conductors with armatures of magnets for transmitting intelligence by signs and sounds, or either, between distant points and to different points simultaneously.

9. The combination and mutual adaptation of the several parts of the mechanism and system of type and of signs with and to the dictionary or vocabulary of words, as described in the foregoing specification.

In testimony whereof I, the said Samuel F. B. Morse, hereto subscribe my name, in the presence of the witnesses whose names are hereto subscribed, on the 7th day of April, A. D. 1838.

SAML. F. B. MORSE.

Witnesses: B. B. French, Charles Monroe.

Aristotle was once asked what those who told lies gained by it. Said he, "That when they speak truth they are not believed."

Specifications for Rubber Insulated Signal Wire.

The committee of the Railway Signal Association having in charge the compilation of specifications for rubber-covered signal wires, recommended at its recent meeting in Washington the adoption of the following rules for testing wires for signal purposes, carrying currents of 600 volts or less:

1. Conductors.—Conductors must be of soft-drawn annealed copper wire having a conductivity of not less than ninety-eight per cent. of that of pure copper. Each wire forming a conductor must be continuous without splice throughout its length, must be uniform in cross section, free from flaws, scales and other imperfections and provided with a heavy uniform coating of tin.

2. Rubber Insulation.—The vulcanized rubber compound shall contain not less than thirty per cent. nor more than thirty-three per cent. by weight of fine dry Para rubber which has not previously been used in rubber compound. The gum itself shall not contain more than three and one-half per cent. of resinous extract. The remaining seventy per cent. of the compound shall consist of mineral matter only. The insulation must be tough, elastic, adhering strongly to the wire, must be homogeneous in character and placed concentrically about the conductor.

3. Taping and Braiding.—(a) The rubber insulation must be protected with a layer of cotton tape thoroughly filled with a rubber insulating compound, lapped one-half its width and so worked on as to insure a smooth surface.

(b) The outer braid must consist of one layer of closely woven cotton braiding one thirty-second of an inch thick, saturated with a black, insulating, weatherproof compound which shall be neither injuriously affected by nor have injurious effect upon the braid at a temperature of 200° Fahrenheit.

4. Tests.—The manufacturer must provide at his factory all apparatus and other facilities needed for making the required physical and electrical tests and must provide the manufacturer's representative with all facilities for assuring himself that the thirty per cent. of rubber as above specified is actually put into the compound. The inspector shall not be privileged to ascertain what mineral ingredients are used in making up the remaining seventy per cent. of the compound. The manufacturer shall give free access to the place of manufacture and opportunity to test at all necessary times. Tests will also be made upon the finished product after delivery, and the wire will be rejected if it fails to meet the requirements of the specifications. The manufacturer must pay freight charges for return of all wire that may be rejected by the railroad company.

5. Physical Test of Copper Conductors.—Each solid conductor must stand elongation of twenty-five per cent. of its length in ten inches before breaking. In torsion it must stand before breaking thirty twists in six inches. It must be capa-

ble of being wrapped six times about its diameter and unwound without showing signs of breakage after the process has been gone through twice. The tension and torsion tests will be made on separate pieces of wire.

6. Conductivity Test of Copper.—The conductivity of the copper shall be determined by measuring the resistance of a length of the wire and comparing with Matthiessen's standard of copper resistance.

7. Tests of Tinning.—Samples of the wire shall be thoroughly cleaned with alcohol and immersed in hydrochloric acid of sp. g. 1.088 for one minute. They shall then be rinsed in clear water and immersed in a sodium sulphide solution of sp. g. 1.142 for thirty-two seconds and again washed. This operation must be gone through with four times before the wire becomes clearly blackened.

8. Tests of Braiding.—Six-inch sample of wire with carefully paraffined ends shall be submerged in fresh water of a temperature of 70° Fahrenheit for a period of twenty-four hours. The difference in weight of the sample before and after submersion must not be more than ten per cent. of the weight of the sample before submersion less the weight of the copper and vulcanized rubber.

9. Physical Tests of Rubber Insulation.—A sample of the vulcanized rubber insulation not less than four inches in length shall have marks placed upon it two inches apart. The sample shall be stretched until the marks are six inches apart and then at once released. One minute after such release the marks shall not be over two and three-eighths inches apart. The sample shall then be stretched until the marks are nine inches apart before breaking and must have a tensile strength of not less than eight hundred pounds per square inch.

10. Chemical Tests of Rubber Insulation.—The vulcanized rubber compound shall contain not more than six per cent. by weight of acetone extract and not more than seven-tenths of one per cent. of free sulphur.

Size B. & S. gage.	Area in Circular Mils.	Thickness of Insulation.	Insulation re- sist. Megohms per mile.	Test voltage Alternating Current.
0	105,592	1/8" wall	1200	10,000
1	83,694	1/8 "	1300	10,000
2	66,373	1/8 "	1400	12,000
4	41,742	3/32 "	1300	9,000
6	26,250	3/32 "	1500	9,000
8	16,509	3/32 "	1700	9,000
9	13,090	5/64 "	1700	7,000
10	10,380	5/64 "	1800	7,000
12	6,530	5/64 "	2000	7,000
14	4,107	5/64 "	2100	7,000
16	2,583	1/16 "	1900	4,000
18	1,624	1/16 "	2000	4,000

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of TELEGRAPH AGE, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.

Home of Paris's \$4-a-Week Telegraph Girl.

Being a government employee, and very badly paid, the Paris telegraph girl has had built for her comfort and safety a brand new, beautiful hotel, which will compare favorably with the Trowmart Inn, the Co-operate, and any other of the public or private hotels or homes which the single, unattached, working woman of New York has at present at her disposal.

The telephone and postoffice girls are sharers with the telegraph girls in their good luck, for together they form one division of the public service, with an under secretary of state to look after them. "La Maison des Dames des Postes," as the new working woman's hotel is called, is due to the fact that the present under secretary "aux Postes et Télégraphes" is a public spirited and humane man, who had been struck by the miserable food and lodgings which fell to the lot of a large number of the working women of Paris, when these happened to be living away from their families.

In all Paris, it seems, there are only a few "homes" built and run expressly for the wage-earning women, and those that do exist answer but imperfectly the needs of the class of women employed by the government. As for the restaurants run expressly for women, their number is exceedingly small, and they, too, for divers reasons, do not attract the patronage of business women.

Yet many of these poor telegraph, telephone and postoffice girls earn only \$4 a week, \$16 a month. The under secretary dreamed a dream of a co-operative hotel and restaurant, where these \$4 a week girls of his could find light, pretty, cheap bedrooms, and food that, costing but a few cents a meal, would yet be nourishing and appetizing. And to-day this dream has become a reality.

Such enterprises as hotels for women wage-earners not coming within the scope of the postal, telegraph and telephone department, a private company had to be formed and capitalized. This was done at the beginning of 1905. What with gifts amounting to \$20,000, a loan of \$60,000, and stock issued to the amount of about \$40,000, this company has succeeded in erecting a fine six-story building, which is already occupied, if its formal opening has not already taken place. The lot, at No. 41 Rue de Lille, cost \$43,600; the building, \$60,000; furnishing, running expenses, etc., \$16,400; in all a total of \$120,000.

Built in the favorite French fashion, around an interior courtyard (which in this instance has been made into a charming garden with an area of over two thousand square feet), this house is most attractive without as well as within and entirely up to date in its appointments. Each floor is equipped with bathtubs, shower baths, hot and cold water service, ample wardrobes, etc., and the plumbing is of the best. Rounded corners and angles make absolute cleanliness easy. The bedrooms, to the number of 111, are fitted up with

taste, even elegance, the furniture having been made expressly for the house. The walls, as is the case throughout the building, are frescoed instead of papered, and each bedroom is decorated with a frieze of spring flowers, giving a charmingly bright decorative effect. These bedrooms are steam heated, and let for from \$3.60 to \$7 a month—the most expensive of them being cheaper than the quarters, less hygienic in respect to light, heat and location, which a woman can find elsewhere. Seventy-five rooms were already rented before the opening day.

The ground floor is occupied by a spacious and imposing lobby, a large restaurant and, adjoining, a broad veranda and combination reading and study room. In the basement are situated the kitchens and lavatories for the use of patrons not residing in the house.

The reading and study room is open not only to the boarders, but to all women in the employ of the Postal-Telegraph-Telephone service, upon payment of a monthly fee of ten cents. The members of the reading room thus constitute a working girls' club. These girls already possess enough general culture to follow public events with intelligence, and it is hoped that in this club they will enjoy the advantages too many of them have been deprived of. The club work is, unfortunately, much handicapped at present by reason of the meagreness of its library, which has to depend for growth entirely upon outside sources. However, the managers of several publishing houses have come to its aid with contributions of books, and the editors of several newspapers and periodicals also contribute regularly. Complimentary tickets have also been received from several theatrical managers.

In order to complete the ethical and philanthropic work so wisely instituted, the managers of the restaurant have decided to open this department to all women, whether in government employ or not. This restaurant, notwithstanding the elegance of its appointments, offers a nourishing and attractive bill of fare at the most modest rates. It is open from 6.30 o'clock in the morning till 9 at night, and meals are served either a la carte or table d'hôte. For about eighteen cents one can enjoy a complete meal of bread, wine, a relish, meat, a vegetable and dessert.

At the very beginning M. Bliault, the architect of the government and the Musée Social, adopted as his rule, "Nothing to be wasted on superfluities." As a consequence, the decoration, while pleasant in detail and harmonious as a whole, is kept subservient to the practical. Nothing is purely ornamental; everything has a use. The whole building breathes an air of freshness, brightness and sunlight. It is a home where a girl may have privacy or society, as she pleases; a hotel, entirely up to date and as attractive as many a more pretentious hostelry; a woman's club as pleasant as any in the city.

Later the girls employed in the other government departments—the stenographers, copyists and so on—will be lodged in a similar house, to be erected on the same plan as this one.—New York Tribune.

Some Recollections of John A. Brenner, of Augusta, Ga., of the Early Days of the Telegraph in Washington, D. C., and his Services with Various Companies, There and in the South.

I went into the Bain telegraph office at Washington in 1848, then under the management of Cherry Westbrook, to learn the business. After becoming proficient enough to operate I was told that I would have to serve three months before receiving any pay. When the three months were up I was offered \$25 per month to go to the New York office, but declined the offer.

Soon after this I was employed by B. B. French, president of the Magnetic Telegraph Company, Joseph Bailey being the chief operator. The term chief operator was the title given to the manager of an office in those days.

My next employment was under William Linton, chief operator of the Washington and New Orleans Telegraph Company, whither I went with the consent of Mr. Bailey. Here I remained until 1852 when the entire force was dismissed for refusing to work after ten o'clock at night. Mr. Elam Alexander of Macon, Ga., was then the president of the Washington and New Orleans Company, and had promised us relief from excessive night work; failure to keep his promise caused the entire force to refuse to work after the published hour of closing, which was 10 P. M.

When I went into the Bain line office in 1848 their headquarters was on Pennsylvania avenue, north side, next to the corner of Four and One-half street. The Magnetic office was on Pennsylvania avenue, south side, between Four and One-half and Sixth streets, about two-thirds of the distance from Four and One-half street. The Washington and New Orleans office was over the old post office, on the west side of Seventh street between E and F streets; afterwards moved to the east corner of Seventh and D streets, over a butcher's shop.

I was employed at this place under Amos Kendall, president, and J. B. Tree, chief operator, after having been out of the telegraph service for about two years. In 1855 Mr. Kendall ordered me temporarily to Columbia, S. C., to take charge of that office and relieve Mr. Charles Edwards. This I did, and after renewing the office connection and seeing that everything was all right, I asked Mr. Kendall to allow me to return to my place in the Washington office. He replied that he could not consent, but I could name, in round figures, the amount I could live on with my family at Columbia, which I did, thinking the sum stated would cause him to return me to the Washington office. Not so, however, for he answered: "Terms accepted, you can have a furlough of a week or ten days to come after your family

when business will permit." I went after my family in August of that year, and Mr. Kendall then requested me not to make any permanent arrangements at Columbia, as he intended to move me to Augusta, Ga. This he did in September where I relieved Mr. R. H. Woodward, who was in charge of the office, Mr. Woodward being transferred to Savannah, Ga.

In May, 1856, I was appointed superintendent of the district, with headquarters at Augusta, Ga., in place of Mr. W. H. Heiss, and remained in charge until November, 1860, when I was relieved by Zenas Barnum of Baltimore, who had become the president of the company, no cause being assigned for my removal, and Mr. Heiss was again placed in charge of the district.

The Civil War breaking out in 1861, Mr. Heiss went north and after the separation of the lines, which were then in charge of the American Telegraph Company, I was asked to again take charge of the district, as superintendent, which I did and remained in charge from 1861 until shortly after 1903, when I retired from all active service.

After the close of the war the lines were again taken in charge by the American Telegraph Company as soon as released by the United States authorities, and later, in 1866, the Western Union Telegraph Company took control by absorption and continue in charge.

In my Washington days, and for several years afterwards the register was required to be used in receiving messages. On one occasion, while in Washington, I went out one night with some of the boys to get an oyster stew, leaving the register to do all the work. Charley Edwards at Columbia was sending. About the time we were ready to return to the office, the butcher, over whose shop the office was located, informed me the devil was to pay upstairs; that he thought the house was about to fall in. On reaching the operating room I found the cord attached to the register weight had broken, and Edwards still sending. I stopped him, explained the accident and after copying what had been received before the weight broke, got him to resend the remainder.

The first operator working by sound in my recollection was "Tom" Jolly at Augusta, Ga., in 1856. This method was not popular with the higher officials, but finally Mr. Kendall said if Jolly would receive by sound he must let the paper run so as to keep a record.

There were no clerks employed in the early days. The chief operator kept the accounts of the office, waited on the public, with the assistance of the other employees. The method of keeping accounts was of the most simple character. Nothing like a check report was used, and an error sheet was unknown.

Marcus Aurelius asserted: "How much time he gains who does not look to see what his neighbor says or does or thinks, but only at what he does himself to make it just and holy."

A Civil War Time Message.

There is a little round prairie containing several acres of land twenty miles east of Independence, Mo., on the old Lexington road, which was the scene of a dramatic incident during the Civil War. W. F. Bassett, one of the old-time military telegraph operators, tells the story, says the *Kansas City Star*:

"I was operator on the staff of General Curtis during the raid of General Sterling Price in 1864. General Curtis was stationed at Independence with between 8,000 and 10,000 men to check the advance of General Price until General Pleasanton, who was thundering in his rear with 20,000 veteran cavalry, could overtake him. General Price was reported at Boonville, and one morning General Curtis summoned me to his headquarters.

"An escort of 200 men under Colonel Scott," said he, 'will be ready in an hour, and I desire you to proceed to Lexington to repair the wires where they have been cut and notify me from Lexington of the movements of General Price.'

"It required two days for us to repair wires along the route, and the second morning after leaving Independence we dashed into Lexington with a wild yell and sabers drawn, but found no one to resist us. Colonel Scott immediately sent out scouts east to reconnoiter, who returned about eleven o'clock and reported Price's advance under Shelby about twelve miles distant moving forward and likely to reach Lexington about three or four o'clock in the afternoon. Shortly after three o'clock scouts on the lookout reported Shelby only three miles from town, and soon we left the western part of town just as Shelby was entering from the east. We met with no serious opposition until darkness set in, when the guerrillas in force began to harass us from the woods on each side of the road. We soon discovered that considerable force had followed us from Lexington, and our situation became perilous. We were prevented from marching rapidly by the continuous firing of the enemy, a wounded man having now and then to be taken care of. The idea of the enemy was to retard our progress as much as possible until they received further re-enforcements sufficient to surround and capture our escort of 250 men.

"At midnight we reached the little round prairie east of Independence, and Colonel Scott concluded to halt there until morning. The situation was indeed discouraging and our chances for escape in the morning were not alluring. There was a little farmhouse in the center of the little prairie and the telegraph line ran along the road in front of the house, but, presuming as a matter of course that the enemy had cut the wires east and west, we did not at first consider them as a factor in the emergency we had to meet. The coming of daylight meant a hot fight and perhaps defeat and capture also. The men were held in line under arms outside and the officers sat in the little farmhouse smoking and telling stories, as if not an enemy was near to disturb their peace of mind. I remember that one of the officers told the story of the siege of Lucknow in India during the Sepoy rebellion of 1856, when Jessie Brown, the

half-witted daughter of a sergeant, three days before the coming of relief to the beleaguered garrison, ran around crying out excitedly:

"'Dinna ye hear it? Dinna ye hear it? 'Tis the slogan sound, 'tis the bagpipes of the Highlanders, the Campbells are comin'.' And the third day afterwards Lord Colin Campbell marched in with the clan Campbell regiment, the slogan sounding and the bagpipes playing, and the garrison was saved.

"About one o'clock an incident occurred which forcibly illustrated the saying that nothing should be taken for granted in war, but that every possible chance for relief should be taken advantage of. I said to Colonel Scott:

"'There is one chance in a hundred that they have not destroyed the wires west of us; suppose we try it.'

"I put on my pole climbers, strapped my field instrument over my shoulder, and a haversack with a coil of wire and tools in it. I had also swung a lighted lantern over my shoulder. Getting to the top of the pole, I at once connected the instrument with the wire, a loop constructed for the purpose holding the two ends together. But the little instrument did not respond, and it seemed that the wires were dead. I took a coil of copper wire from my tool sack, and, holding to one end, let the coil drop to the ground.

"'Stick the end of this wire into the ground as far as you can,' I cried to the men below. This I intended to use as a ground wire testing east and west. As soon as they struck the wire in the ground I touched the other end to the end of the telegraph wire and the little instrument snapped, and I knew the wire was all right west. The letter D was the call for General Curtis' headquarters, and I immediately began calling. I was answered after a few signals, and some one said:

"'Who is that?'

"'S. T.' was my telegraph signature, and I replied:

"'This is S. T., twenty miles east of Independence on top of a telegraph pole. Take this message quick from Colonel Scott to General Curtis:

"'Surrounded twenty miles east on the Lexington road by a large force. Badly in need of relief.'

"In five minutes a reply came, saying: 'Relief will start in an hour.'

"I was sitting on the pole well satisfied with myself when a rapid firing all at once opened up from the woods. I did not fully comprehend this sudden fusillade until one of the officers cried out:

"'They have caught on, young fellow, and are firing at you and that lantern.'

"With one convulsive movement I threw out my left arm and let the lantern fall to the ground, for I could hear the spit, spit of the bullets, and knew they were getting a good aim on me. I lost no time in shinning down that telegraph pole, I can assure you.

"Nothing further occurred until just as dawn was

breaking. One of the officers went out and returned quickly, saying to Colonel Scott:

"The Campbells are coming."

"A few minutes thereafter a regiment dashed in and the enemy, observing the unexpected turn of events retired, and we were saved."

Lincoln's Envy.

(F. M. McClintic in the Railroad Man's Magazine.)

President Lincoln once stated to the late Jesse H. Bunnell, who was then military telegrapher to General George B. McClellan in Washington, that he would give a thousand dollars had he learned telegraphy when a boy. Mr. Lincoln used to talk to young Bunnell on matters of state, as will be seen by an excerpt from a letter written by a member of the military corps stationed in Washington to another in New York during the war, dated Washington, District of Columbia, December 14, 1861, and addressed "Dear Jack." The letter follows:

"Washington is a sight. I don't wonder Mr. Lincoln said one could not throw a stone down Pennsylvania avenue without hitting a brigadier-general. The town is full of them and the Army of the Potomac is stalled at Alexandria. McClellan is here and does business by telegraph. He has for an operator one of the handsomest young men I ever saw—Jesse H. Bunnell. He and Mr. Lincoln are very chummy. Jesse is considerably under twenty years of age, but the President talks to him in a way that is very funny. Jesse says he should feel complimented, but he realizes that the President is simply thinking aloud."

"It is one of the best possible tributes to the telegraph that it interests the very best minds. Up in Amherst some of the ginger-pop professors used to sniff a little at my enthusiasm about telegraphy. They regard it as a trade, and not just the thing for a college man. Now comes Abraham Lincoln, the foremost of all living men to-day, throws his long leg across the table where Bunnell is receiving dispatches, stays around until long after midnight, looks over Jesse's shoulder and says: 'Young man, I would give a thousand dollars if I had learned to do that when I was young. The ability to read those signals is a never-ending mystery to me.'"

"Continuing his inmost thoughts, the President would say: 'And, Jesse, McClellan says he needs more men. What do you think? He has quite a few down there at Alexandria, and he seems inclined to keep them there until spring. Secretary Cameron is growing weary of running a war, and we are going to accept his resignation and put in a more active fellow. I have my eyes on one now. But, Jesse, he may be too active. The happy medium is a mighty hard thing to strike. Don't you find it that way in your own business? Some of the boys send too fast and some too slow, and some just right, eh? Well, that is just what is needed in the War Department, a man who can send just right; take a gait and keep it.'"

"It is with men as with horses; some of them are great at a spurt, but not many are all wool and

a yard wide at a pull. The new Secretary of War must be as good at a pull as he is at a spurt, or this war will hang along until everybody will be worn out. Well, Jesse, we are going to do something pretty soon—along in February we will begin moving. I guess McClellan doesn't need any more men to hold Alexandria with—no, indeed."

Telegraph Earnings in the Early Days.

The meagreness of the telegraph earnings in the early days is conclusively shown in the following official statement:

Daily receipts of telegraph, Washington, D. C., office, for the quarter ending March 31, 1846:

January.	February.	March.
1st—\$2.60	2nd—\$1.36	2nd—\$5.87
2nd—3.56	3rd—1.95	3rd—3.75
3rd—3.03	4th—2.32	4th—1.91
5th—3.30	5th—1.37	5th—2.65
6th—.96	6th—2.55	6th—2.70
7th—2.41	7th—1.13	7th—3.76
8th—1.01	9th—2.27	9th—3.27
9th—1.37	10th—4.29	10th—1.57
10th—1.90	11th—2.04	11th—2.43
12th—2.26	12th—1.82	12th—3.07
13th—4.18	13th—2.39	13th—1.66
14th—3.47	14th—1.55	14th—3.84
15th—4.10	16th—2.50	16th—2.99
16th—2.71	17th—2.91	17th—2.83
17th—2.04	18th—2.41	18th—3.25
19th—3.84	19th—2.39	19th—4.05
20th—1.97	20th—2.92	20th—5.00
21st—1.47	21st—3.57	21st—3.36
22nd—3.56	23rd—3.61	23rd—3.03
23rd—1.88	24th—2.83	24th—1.66
24th—2.24	25th—2.84	25th—2.20
26th—2.51	26th—3.79	26th—3.15
27th—2.27	27th—1.78	27th—1.34
28th—2.45	28th—2.99	28th—2.55
29th—3.12		30th—1.66
30th—3.32		31st—2.29
31st—1.58		
Total—\$67.01	Total—\$60.58	Total—\$75.84
January, \$67.01;	February, \$60.58;	March, \$75.84;
Total, \$203.42.		

ALFRED VAIL,
Asst. Supt. of Elec. Mag. Tel. for the U. S.

Concrete Telegraph Pole.

The Pennsylvania Railroad Company has decided to experiment with a concrete telegraph pole. Four will be erected between Mansfield and Crestline and a half mile of the new style posts will be used between Crestline and Bucyrus.

The new poles are thirty feet in height, eighteen inches in diameter at the base and ten inches at the top. They will be placed in the ground about five feet. The cross arm is also made of concrete and is ten feet in length, six inches high and two inches wide.

Should the cross arm not come up to the standard hoped for, the pole has been so constructed that the cross arm can be removed and replaced by the old style wooden cross arm. To erect the poles the company has been obliged to use a wrecking derrick.

The poles are manufactured by the company and should the experiment prove successful the expenses of the system will in the long run be cut down.

Reno as a Repeater and Relay Office.

The City of Reno, which is having a substantial and rapid growth, and which is situated in the extreme western part of Nevada, not far from the California boundary, has become one of the most important repeater and relay offices west of Chicago. The office has fourteen wires west, five of them copper; twelve wires east, three of which are copper; six wires south and one north into Oregon. The equipment of the office includes a storage battery, lately installed; eight quadruplex and six duplex sets; Wheatstone repeaters, two single line repeaters, two half sets and six Morse sets. The office is under the management of T. H. Brown. J. E. Palmer is chief operator; A. O. Van Fleet night chief, and W. F. Sedgwick, all night man. Besides these there are

of Mayfair." It was filed at 9.39 o'clock December 3, by Frederic Thompson, of Thompson and Dundy, at the main office of the Western Union Telegraph Company, and after circling the earth, over 26,000 miles of submarine and overland wires, was received by the Postal Telegraph-Cable Company at 12.50. The time, two hours and eleven minutes, establishes a record which is considered marvelous by the officials of the telegraph companies.

It was the first commercial message ever sent from this city around the world. The dispatch sent by President Roosevelt in 1903, at the time of the celebration of the opening of the Commercial Pacific Cable, consumed but nine minutes, but preparations for its transmission had been made beforehand, and it went over clear wires.



THE OPERATING ROOM OF THE WESTERN UNION TELEGRAPH COMPANY, AT RENO, NEV.

ten messengers, one book-keeper and assistant, three clerks and five messengers. The Reno office handles about 2,000 messages per day, including stock reports and considerable press.

The accompanying engraving of the operating room shows a large and busy interior, the magnitude of which attesting the importance of the office, will doubtless be a revelation to many of our readers.

Message Circled Earth in Two Hours.

When sending the globe to wish you a world of success.

—Frederic Thompson—

This was the message filed by Thompson and Dundy at the Western Union Telegraph Company at Reno, Nevada, December 3, 1903, at 9.39 o'clock.

Three minutes after the sending of Mr. Thompson's message, it was in the London office. Thence it went to Alexandria, Port Said, Egypt; to Aden, Arabia; to Bombay, Madras and Singapore, India; to Saigon, Siam; to Hong Kong, China; to Manila, thence over the Commercial Pacific cable, touching at Guam, Midway Islands, and Honolulu to San Francisco, and from there across the continent to New York.

An exchange, in commenting on the action of a telegraph manager who is employing negro messenger boys, says that he probably aims at getting better service when he engages lads of fast color. That theory, however, won't hold water. A fast color is warranted not to run, so what's the use?

Some Valuable Telegraph Books.

Suitable for Holiday Gifts.

All of the books described in the following list embody a choice number from which selections may advantageously be made, and furnishes an excellent catalogue for the consideration of telegraphers. Any book named will be sent upon receipt of price to any address, carrying charges prepaid. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

POCKET EDITION OF DIAGRAMS.

"Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students" is acknowledged on all sides to be the standard work of the telegraph. Speaking strictly within bounds, it is not too much to say that this volume presents the finest study of the complex subject of the telegraph ever attempted. There is no other book like it or even approaching it, in thoroughness, comprehensiveness, or in original detail of statement. The author, Willis H. Jones, is a practical telegrapher himself—an engineer in his profession of recognized ability, who knows exactly what other telegraphers want to know, and has the faculty of imparting that knowledge in a manner at once so clear, so simple, so bright, so entertaining, so free from needless technicalities, that his readers, even the least informed among them, readily understand his meaning. The helpful qualities of the work will be clearly manifest alike to the beginner, to the student, to the operator and to all telegraphers whether in the commercial or in the railroad service.

"Pocket Diagrams" does not deal in theory; it is packed full from cover to cover of the common sense of telegraphy, the side against which the ordinary every day operator runs up against, and respecting which he desires information of the kind that will aid, not mystify, him. The book contains 334 pages, and has 160 splendid diagrams. It has the unqualified endorsement of telegraphers everywhere.

The price of Pocket Edition of Diagrams, etc., is \$1.50.

PHILLIPS CODE.

The popularity of the Phillips Code, by Walter P. Phillips, was never more apparent than at the present time. Its acceptance by the telegraphic fraternity, as a standard work of the kind, dates from its first publication, and the constantly increasing demand for this unique and thoroughly tested method of shorthand arranged for telegraphic purposes, has necessitated from time to time the issuance of several editions. The present edition was carefully gone over under the supervision of Mr. A. P. Velie, an expert press and code operator, for many years identified with The Associated Press, New York, a few revisions made and a number of contractions added, until now this "staunch friend of the telegrapher" is strictly up-to-date in every particular. It has been declared that an essential qualification of a "first-class operator" was a thorough understanding of Phillips Code.

Many expert code operators have examined the revised edition of this code, and all unite in pronouncing it perfect. Mr. George W. Conkling, who has won the championship for sending code in many tournaments, says:

"I have examined thoroughly the additions contained in the latest edition of the Phillips Code and most heartily approve of them. Every operator who is familiar with the code should find no difficulty in mastering the new contractions, as they 'fit in' smoothly and I think the ground has been entirely covered."

The price of the book is \$1 per copy.

"Telegraphers of To-day," illustrating the personnel of the telegraphic profession with more than 900 biographical and historical sketches of leading members of the craft, is a unique and valuable work; it has become standard, being the only work of the kind extant. It contains 354 double column pages, 7 by 11 inches in size, has gilt edges and is bound in imitation Morocco—altogether a handsome volume.

Of this fine publication, becoming more and more valuable as time passes, we have but a few copies left. The original price was \$5. In order to readily dispose of these remaining volumes, and place them where they rightfully belong, in the hands of every telegrapher who failed to secure a copy at the higher original price, we have cut the

figure to \$1 a volume. On receipt of this amount the book will be sent to any address, express charges to be paid by the purchaser. At this low rate, a sum below the cost of binding the book, no telegrapher who desires to own a copy should fail to obtain one at this time, for this "bargain" price will probably never be repeated.

"The Quadruplex," by William Maver, Jr., and M. M. Davis, still holds its own as a work of authority in its treatment of its subject. A clear analysis of that system of telegraphy is afforded and telegraphers have constant need of the book. There are 128 pages in the volume and 63 illustrations; price, \$1.50.

The life of Prof. S. F. B. Morse, the standard work, authorized by the Morse family, and compiled from original papers and other authentic data in their sole possession. It is a clearly written biography, charmingly told by a trained newspaper man, a close personal friend, and presents the life of this great inventor of the telegraph in a broader, more intense, human and truthful attitude than ever before attempted or even possible; 775 pages, illustrated; sheepskin binding. The original price was \$6, which we have reduced to \$3, on receipt of which the book will be sent, express charges prepaid.

"The Telegraph in America," by the late James D. Reid, the "father of the telegraph," furnishes an authentic and complete history of the telegraph, tracing out its early start, its development, the organization of the various telegraph and cable companies, etc. The book is bound in full Russia, has 846 pages and is abundantly illustrated; a magnificent gift to any telegrapher. There are now but a few copies left of this great work and when these are gone the work will be out of print. The original price was \$7, but as the covers are a little shopworn the price has been reduced to \$5.

"Sketches Old and New," by Walter P. Phillips, is a handsomely bound volume of 164 pages of interesting and charmingly told telegraph stories; one of the very best works of the kind ever published and which will appeal strongly to every telegrapher; price, \$1.

"Lightning Flashes and Electric Dashes," a book made up of bright, ably written stories and sketches; telegraphic and electrical, that should find a place in the home of every telegrapher; 160 large double-column pages; profusely illustrated; price, \$1.50.

Old Timers' Souvenir—Miniature Legless Key. This is a beautiful emblem for operators; an attractive charm for the watch chain; a perfect duplicate in every detail of the celebrated miniature steel lever telegraph key that attracted so much attention and which was distributed as a souvenir at the banquet of the Old Time Telegraphers' and Historical Association at the Waldorf-Astoria, New York, August 31, 1905. It has a French lacquered body and nickel-plated lever. Price, by registered mail, prepaid, \$1.50.

"The Practical Management of Dynamos and Motors," by F. B. Crocker and S. S. Wheeler, as indicated by its title, affords a clear understanding of the use, care and operation of these important adjuncts of the well equipped modern telegraph office. There is a constant demand for this book, for telegraphers find it an invaluable addition to their working library. There are 206 pages, and 99 illustrations; price, \$1.

"Electrical Instruments and Testing" is the title of a new volume by that industrious and excellent writer on such subjects, Norman H. Schneider. This book treats of the use of the voltmeter, ammeter, galvanometer, potentiometer, ohmmeter and the Wheatstone bridge. The explanations are practical, given with numerous worked out examples, fully illustrated with diagrams and drawings. The book is intended for practical, everyday use, and also as an introduction to the larger works on electrical testing. The apparatus described is modern and such as is generally employed. The volume is well printed on plate paper, contains 199 pages, including a fine index, and there are eleven chapters and 105 illustrations. The price is \$4; bound in cloth.

Important Subjects Treated in Back Numbers.

TELEGRAPH AGE has published the best articles on telegraphic subjects that have ever appeared in print. Herewith are enumerated a few of the most important subjects treated, together with the date of the papers containing the same. Copies of these back numbers may be had at twenty-five cents apiece upon application. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

Adjustment of Relays and Sounders.....	Oct. 1, 1902
Alternating Current Transformer for Quadruplex, W. H. Jones, Mch. 1-16, 1904	1904
American Cable Across the Pacific.....	July 16, 1903
Alaskan Telegraphs.....	Jan. 1-16, Feb. 1, 1906
Atmosphere and Earth Electrical Conditions, E. C. Walker, Dec. 16, 1904	1904
Aurora Borealis, The.....	Nov. 16, Dec. 16, 1903
Autoplex, The.....	Feb. 1, 1903
Barclay Combination Quadruplex Rheostat.....	July 1, 1903
Barclay's Direct Repeating Relay for Multiplex Circuits.....	July 16, 1902
Barclay's Printing Telegraph System, W. H. Jones.....	May 16, 1906
Barclay's Repeating Relay, Main Line Relay and Box Relay, Jan. 1, 1904	1904
Barclay Typewriting Telegraph System.....	Jan. 16, 1904
British Patent Office Rules.....	Apr. 16, 1906
British System of Timing Messages.....	Dec. 1, 1902
Buckingham Long Distance Page Printing Telegraph.....	Sept. 1, 1902
Burry Page Printing Telegraph.....	Apr. 1, 1903
Cables and Russo-Japanese War.....	Apr. 1, 1904
Cable Station in Mid-Pacific, Our Dr. Martin Crook.....	Feb. 16, 1906
Central Cable Office, New York.....	June 1, 1903
Central Telegraph Office, London.....	Oct. 16, 1904; May 1, 1906
O. K. Jones' Automatic Telegraph Circuit Protector and Signaling Machine.....	June 16, 1903
Collins Overland Telegraph.....	May 16, 1903
Composite Circuits—Report Com. Assn. Ry. Tel. Supts., Sept. 1, 1904	1904
Composite Teleg. and Telep. on Canadian Pacific Ry.....	Mch. 1, 1904
Composite Telephone Lines.....	Mch. 1, 1906
Crehore-Squire Automatic Telegraph System.....	May 16, 1902
Definitions of Electrical Terms.....	Mch. 16, Apr. 1-16, June 1, July 1-16, 1904
Delany's, P. B., Automatic Telegraph System.....	Mch. 16, 1903
Delany's, P. B., New System of Rapid Telegraphy.....	Apr. 16, 1904
Direct Polar Relay Repeater of the Postal Telegraph-Cable Company.....	Oct. 16, 1903
Earth Currents.....	May 1, 1903
Engraving of Clarence H. Mackay.....	Nov. 16, 1902
Engraving of Col. Robert C. Clowry.....	Apr. 16, 1902
Engraving of the Late John W. Mackay.....	Aug. 1, 1902
Field's, S. D., Amplifier.....	Nov. 1-16, 1904
Field's, S. D., Quadruplex.....	May 1-16, 1904
Flow of Electricity in the Earth.....	Dec. 16, 1903
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Gray Submarine Signaling Apparatus.....	Jan. 1, 1904
Hand vs. Machine Telegraphy.....	Sept. 16, 1902
Hard Drawn Copper Wire, F. W. Jones.....	Nov. 1, 1903
Harmonic Telegraph, Prof. F. Lori.....	Mch. 16, 1905
Improvements of Roberson Quadruplex.....	Feb. 1, 1903
K. B. Law as Applied to Quadruplex Circuits.....	Jan. 1, 1904
Lefley Telegraph Key.....	Jan. 1, 1904
Life of Storage Batteries.....	July 1, 1903
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Midway Islands Cable Station.....	July 1, 1904
New York Fire Alarm Telegraphs.....	Aug. 16, 1903
Passing of the Quadruplex.....	Aug. 1, 1903
Phillips' System of High Speed Telegraphy, J. W. Larish, Nov. 1, 1904	1904
Pollak-Virag System.....	Mch. 1, 1903
Possibilities of Telephoning Over Tracks to a Moving Train, Mch. 1, 1904	1904
Postal Telegraph-Cable Company, History of (with portraits of officials).....	Feb. 1, 1904
Postal Telegraph-Cable Company Rules Governing Construction and Repair of Telegraph Lines.....	Apr. 1-16, May 1-16, 1904
Printing Telegraph Systems, Modern High Speed, J. C. Barclay.....	Nov. 1, 1904
Printing Telegraph Systems, Story of.....	Jan. 1, 1903
Progress of Telegraphy During Last Thirty Years, W. Mavor, Jr., Mch. 16, 1904	1904
Progress in Fire Alarm Telegraphy.....	Jan. 1, 1903
Proper Adjustment of Telegraph Apparatus.....	Aug. 16, Sept. 1, 1904
Protection of Telegraph or Telephone Lines When in Hazardous Proximity to High Speed Lines.....	June 1, 1904
Random Recollections of 145 Broadway, W. F. Phillips.....	Feb. 1, 1906
Rapid Telegraphy, P. B. Delany.....	Nov. 16, Dec. 1, 1904
Recent Improvements in Telegraphy, J. C. Barclay.....	Feb. 1, 1906
Reminiscences of New York Telegraphers a Quarter of a Century Ago.....	Jan. 1-16, Feb. 16, Mch. 1, 1906
Repeaters:	
Atkinson.....	Feb. 16, 1902
Half-Milliken.....	Feb. 16, 1902
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Defective Loop.....	Mch. 1, 1902
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Rowland Multiplex Printing Telegraph System.....	Sept. 16, 1903
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Simultaneous Telegraphy and Telephony.....	Aug. 16, 1903
Skirrow Switchboard.....	Nov. 1, 1903
Specifications in Construction of 25-foot Pole Line, American Telephone and Telegraph Company.....	Feb. 16, Mch. 1-16, 1904
Stevens' Wheatstone Transmitter.....	July 16, 1902
Stick Telephone, J. C. Barclay.....	June 16, 1904
Stock Tickers, O. L. Healy.....	Mch. 1-16, 1906
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Sullivan Outgoing Signal Recorder.....	Mch. 1, 1905
Switchboard Practice at Intermediate Stations.....	Dec. 16, 1904
Ago, Jos. Hollos.....	Feb. 16, 1905
Telautography.....	Aug. 1, Dec. 1, 1904
Telegraph Alphabets.....	Jan. 1, 1904
Telegraph and Weather Service.....	Nov. 1, 1903
Telegraphic Bookkeeping, Jan. 16, Feb. 1, Mch. 16, Apr. 1-16, May 16, July 16, Aug. 1, Sept. 16, Oct. 1, 1903	1903
Telegraph Operator in Railroad Service, J. B. Taltavall, July 1, 1904	1904
Telegraphs in New England, W. P. Phillips.....	Apr. 16, May 1-16, 1904
Telephone, The.....	June 16, 1902, Mch. 1, 1903
Telephone and Telegraph Bureau, U. S., Washington, D. C. May 1, 1903	1903
Telephone in Railway Service.....	July 16, 1902, Jan. 1, 1903
Telephony and Telegraphy at Internat'l Electrical Cong.....	Oct. 16, 1904
Testing Device, Useful and Simple.....	Jan. 1, 1904
Transmitting Typewriter Wire Connections.....	Feb. 16, 1904
Twentieth Anniversary Number.....	Jan. 1, 1903
Twenty Years of Standard Time, W. F. Allen.....	Feb. 1, 1904
Typewriting Telegraphs, L. S. Wells.....	Aug. 1, 1904
Typo-Telegraph (Dr. Cardwell), F. J. Swift.....	June 1, 1905
United States and British Telephones and Post Offices, F. W. Jones.....	Apr. 1, 1904
Use of Modern Telephone as Applied to Railroads.....	Jan. 16, 1905
Vibratory Telegraph.....	Aug. 16, 1903
Washington as a News Centre.....	Nov. 16, 1904
Western Union Telegraph Company, History of (with portraits of officials).....	Jan. 16, 1904
What Constitutes a First-Class Operator.....	Oct. 1, 1904
What Constitutes a First-Class Chief Operator.....	Nov. 1, 1904
What Constitutes a First-Class Manager.....	Nov. 16, 1904
What Constitutes a First-Class Superintendent.....	Dec. 1, 1904
What Constitutes a First-Class R. E. Operator.....	Dec. 16, 1904
Wheatstone Automatic Duplex.....	Apr. 1, 1902
When Is a Storage Battery Fully Charged.....	Aug. 16, 1904
Wind Pressure on Telegraph Structures, F. W. Jones.....	Dec. 16, 1903
Wire Tables—How to Remember Them, C. F. Scott.....	Apr. 16, 1904
Wireless Telegraphy at Sea.....	Mch. 1, 1904
Yetman Transmitter (Description and Engraving).....	Aug. 1, 1903

Books on the Submarine Cable.

The following list presents an excellent choice of books, with prices, treating on the submarine cable, about every phase of which is discussed. The works named are standard and are of a character that should insure ownership of the lot by every cable man who seeks to acquire a fuller knowledge of the subject of his profession. They are a library in themselves. They will be sent singly or collectively, as may be required, carrying charges prepaid, on receipt of price. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York:

Baines, G. M.—Beginners' Manual of Submarine Cable Testing and Working.....	\$3.50
Bright, Charles—Treatise on Submarine Cables.....	\$25.00
Hoskiaer, Capt. V.—Guide for the Electric Testing of Telegraph Cables.....	\$1.50
Fisher and Darby's—Students' Guide to Submarine Cable Testing.....	\$4.00
Kempe, H. R.—Handbook of Electrical Testing.....	\$6.00
Mullaly, John—The Laying of the Cable; or, The Ocean Telegraph.....	\$4.00
Parkinson, J. C.—The Ocean Telegraph to India.....	\$4.00
Smith, Willoughby—The Rise and Extension of Submarine Cables.....	\$9.00
Wilkinson, H. D.—Submarine Cable Laying and Repairing.....	\$5.00

Through the Book Department of TELEGRAPH AGE you can obtain any book desired. Send for the new catalogue.

The Railroad.

H. St. J. Mitchell, aged fifty-five years, an old time telegrapher, for the past few years division superintendent of the 'Frisco line at Fort Scott, Kans., died on November 17.

Up-to-date managers of steam railroads are realizing more fully every day the value of the telephone in the successful operation of their systems. The importance of instantaneous communication between the various power houses, stations, offices, repair shops, car and round houses has been permanently established, and no modern equipment lacks a telephone exchange to keep each department in touch with the others. All the big steam railroads would no more think of dispensing with their telephone system than with their telegraph lines.

The general misgiving as to the efficacy of the precautions taken by railroads for the safety of their passengers, which resulted from the wreck on the Southern Railroad near Lynchburg, Va., on November 29, in which President Samuel Spencer and three guests lost their lives, is reflected in a bill introduced in the House December 4 by Representative George A. Pearre, of Maryland. Congressman Pearre's bill provides that telegraph operators engaged in signaling trains by the block system shall be required to pass an examination prepared by the Inter-State Commerce Commission and receive from that body a diploma attesting their efficiency before being given a position. The bill also provides that operators shall not work longer than eight hours of the twenty-four, unless after ten hours' consecutive rest.

The accident on the Southern Railway on November 29, near Lawyers Depot, Va., by which Samuel Spencer, president of the road, and others, including Gen. Philip Schuyler, guests of the president, who were on their way South for a brief vacation, places on record an occurrence that has elicited widespread comment and expressions of profound regret, especially in railroad circles. For President Spencer was regarded as one of the most efficient and progressive railroad men in this country. The disaster was due to a rear end collision and it is deplorable that the blame is traced to the fault of the telegraph, and to the imperfect workings of the block system. Singularly so as Mr. Spencer personally entertained a high regard for the accuracy of the telegraph and its operating force, and placed much faith in the workings of the blocks system. Singularly enough Mr. J. W. Davis, of Washington, one of the chief despatchers of the road, who was accompanying the train as an especial measure of protection, was also among the killed.

Mr. J. T. Harahan, the new president of the Illinois Central Railroad system, has appointed G. H. Groce, superintendent of telegraph, to be assistant general manager. This elevates to a position requiring the exercise of more than ordinary executive ability a telegrapher who has al-

ways shown marked capability in his department. By this change Mr. E. Parsons, the assistant superintendent of telegraph, has been promoted to be superintendent of telegraph, with headquarters at Chicago.

Young man of good habits, fine clerical and electrical knowledge, and experience, desires position with railroad as wire chief. Capable of taking entire charge of line in capacity of superintendent if necessary. Address "RAILROAD," care of Telegraph Age, New York.

Mr. Boening an Assistant Superintendent at Boston.

Mr. Edward Boening, who since March 1, 1905, has been an inspector of the Western Union Telegraph Company at Boston, was on December 1 promoted to be assistant superintendent of the district, with headquarters at that point. Mr. Boening was born at Rolla, Mo., November 28, 1874, and entered the telegraph service at Chicago when twelve years of age, as a messenger of the Western Union Company, in whose exclusive employ he has since remained. His progress at Chicago was commendable, for he rose successively to the delivery and bookkeeping departments, thence to a position in the office of the



EDWARD BOENING.
Assistant Superintendent of the Western Union Telegraph Company,
Boston, Mass.

manager, afterwards, in 1899, being promoted to Superintendent F. H. Tubbs' office. Here he held the claim, estimate and requisition clerkships, respectively, and acquired valuable experience of the duties of a superintendent's office, which should be of aid to him in his present position. On March 1, 1903, he was appointed chief clerk to Superintendent C. F. Ames, Boston, where he accomplished much in looking after the detail of that office. Now that he has risen to the position of second in Mr. Ames' office, his power for performing more extended service ought to be considerably augmented. Mr. Boening is a hard and conscientious worker and affords another example of progress due to merit.

LETTERS FROM OUR CORRESPONDENTS.

ST. LOUIS, WESTERN UNION.

Arrivals: A. J. Mackler and T. G. Lewis, from New York; F. S. Patrick from Arkansas. L. L. Potter, formerly manager at Quincy, Ill., is also a recent arrival and has been placed at the board.

B. J. Schleuter, J. B. Dewitt and G. A. Folkrod, who have been serving the Armour Packing Company at East St. Louis, have returned to this office.

Elmer S. Blake and George Littlejohn have gone to Memphis.

George H. Douglass is back from an enforced absence of twenty-two days, occasioned by illness.

John Lane, formerly assistant chief operator of this office and now manager at Hot Springs, Ark., came North on a sad mission to bury his daughter, aged 12 years, who died recently at that place.

The new office is shaping itself for occupancy in the near future. The date, however, is rather indefinite, and can hardly be named earlier than the first quarter of 1907.

Messrs. G. V. Burns and L. A. Harrison of Kansas City, are here posting up on the Barclay printer, which is soon to be installed between Kansas City and Chicago, with every indication of a St. Louis-Kansas City circuit being put in ere long.

Miss Mary Halley, of this office, was married on November 28 to Mr. H. Seward French, of Binghamton, N. Y.

NEW YORK, WESTERN UNION.

The sympathy of a host of friends is extended to Wire Chief George F. Stainton through the death of his wife (formerly Miss Josephine Bennett of this department), who passed away on November 29, after a lingering illness.

Miss Winifred Dalton, formerly of this office and lately located at Boston, died December 9, after an illness of three weeks.

Mr. C. W. Pennypacker of the eastern division has been transferred to the mechanical department.

John Rathbone, of the southern division, has returned from a vacation.

The following looked after the Western Union interests at Herkimer, N. Y., during the two weeks' trial of the celebrated Gillette case: Fred. Johnson, J. Rosenbaum, Daniel Drew and William Diehm.

Miss Annette Olmstead, late manager of the office at Litchfield, Conn., was married to Mr. George C. Benedict, at the residence of her father, William Olmstead.

Miss M. E. Robertson has resigned to accept a position as private secretary.

Mr. Robert H. Smith of this department and formerly manager of the American Rapid Telegraph Company, Baltimore, has resigned, and will travel for his health.

Miss C. W. Stevenson and Miss A. D. Schwingler, from the Produce Exchange office, are among the late arrivals.

Edward W. Palmer, formerly of this department, was presented on December 7 with a very handsome solid gold watch and chain by the members of the Lodge of Strict Observance, F. and A. M., of which he is a past master.

Every day just about noon and shortly after that hour, passers by in the vicinity of 195 Broadway, may see a vast crowd looking up at the Western Union Building, their watches in hand, waiting to see the time ball drop. At the stroke of twelve the ball falls and the initiated adjust their timepieces and proceed on their way; but as they disappear a new throng gathers and take up their vigil, looking upwards, not exactly knowing why. It appears the adjoining building also has a flagstaff with a ball attached to the top and recently a wag was heard directing a number of strangers to wait until the ball fell, which of course never occurred, and it took some time and a little persuasion on the part of the Broadway policeman to adjust matters and disperse the expectant gathering, while the joker disappeared, his face wreathed in smiles.

OTHER NEW YORK NEWS.

The regular meeting of the Electric Building Loan and Savings Association for the nomination of trustees was held in the office of the corporation at 253 Broadway, New York, on Friday, December 14, with the following result: David B. Mitchell, president; James R. Beard, vice-president; E. S. Butterfield, treasurer; Edwin F. Howell, secretary; John B. Sabine and Alexander J. Schem, counsel and attorneys. Directors, M. J. O'Leary, W. H. Jackson, Eugene P. Tully, J. B. Taltavall, M. W. Rayens, F. C. Leubuscher, G. W. Blanchard, G. H. Schnitgen, Henry Zweifel, Jr., M. S. Cohen and P. O. Purcell.

The annual meeting of the corporation will be held in the same place on Friday, January 11, 1907, at 5 P. M. Polls for the election of officers and directors will be open from 2 P. M. to 5 P. M.

The regular meeting of the Serial Building Loan and Savings Institution for the nomination of trustees, will be held in the office of the corporation at 195 Broadway, New York, on Tuesday, December 18, at 5 P. M. The annual meeting of this corporation will be held in the same place on Tuesday, January 15, 1907, at 5 P. M. Polls for the election of officers and directors will be open from 2 P. M. to 5 P. M.

The recent death of Augustus A. Rich caused the following resolution to be placed upon the minutes of the Serial Building Loan and Savings Institution:

"The board of management of the Serial Building Loan and Savings Institution of New York has received with profound sorrow the announcement of the death of the Hon. Augustus A. Rich,

counsel for New Jersey. Mr. Rich has been continuously our legal adviser and attorney for New Jersey since the organization of this society in 1885. His counsel has always been wise, disinterested and just, and his course of action for the best interests of the Institution and the welfare of every member of the association. Every officer of this Board has lost a charming companion and every member of the society an earnest and true friend."

Business Notice.

Mr. D. A. Mahoney, of 253 Broadway, New York, who deals in typewriters and supplies and whose motto of "Honorable Dealing" has become so familiar a headline in his advertising announcements in this journal, has made arrangements with the American Writing Machine Company, of New York, to handle their typewriters among the telegraph fraternity of this country. Mr. Mahoney has constantly on hand rebuilt machines for sale, practically as good as new, those of the Remington and Smith Premier patterns being rebuilt at their respective factories. Mr. Mahoney is a well-known member of the telegraph profession, has been a dealer in typewriters for the past ten years, and it is yet to be charged against him that he has failed to live up strictly to his engagements.

NEW YORK, POSTAL.

Mr. J. J. Kennedy has been appointed to the marine department, vice Mr. Edward A. Harvey, who has resigned to enter other business. Mr. Kennedy is well known in marine circles, having been identified with that service for a quarter of a century past.

George Young, aged thirty-five years, a brother of William W. Young, manager of the Sandy Hook, N. J., observatory signal station, was overcome by the bitter cold and frozen to death on December 4, while on his way from the boat landing at the hook to the telegraph office.

Mr. F. R. Holden, for the past three years clerk to Manager F. F. Norton, has resigned to accept a position with the New York Edison Laboratories, this city. He carries with him the best wishes of his friends here.

George B. Pennock, of the Hearst News Service Office, has returned from his vacation.

Miss E. Ferguson, formerly located at the Gerken Building, has been transferred to this office; also, Miss M. Carew, from the Queen Building.

Miss L. Jenkins, another branch office operator, is now located at this office.

Arthur Farrell has been added to the service department.

Miss Ethel Coleman has been appointed an operator from the check force.

The new arrivals include: D. Davis, E. L. Lipshield, E. C. Bailey, S. T. Barager, Thomas Fox, H. Bonney; R. Dorner, E. K. Burnham and J. A.

Murphy, coming from Cotton Exchange, New York.

The resignations are:

Miss H. Turner, W. Middleton, W. H. Flynn, J. A. McConnell, J. H. Johnston, R. Geslason and D. Ellington.

The Postal Branch Office Managers of Cincinnati Meet for an Evening's Enjoyment.

Manager C. E. Sawtelle, of the Postal Telegraph-Cable Company, Cincinnati, was again instrumental in affording the branch office managers of that city a pleasant evening, the affair in question occurring on the evening of November 20. Notwithstanding the inclemency of the weather about sixty persons were in attendance. The managers met in the lobby of the Postal office and in a body marched to the Bell Telephone Company Building. Here Superintendent Peavy was in readiness to receive the visitors, and personally conducted them on a tour of inspection throughout the building. Afterwards a musical programme was listened to in the assembly hall of the building, being followed later by a discussion of the four subjects of "Cooperation," "System," "Thoughtlessness," and "Advertising." This was entered into very heartily, fully a dozen or more taking part, and proved to be a highly instructive feature. Superintendent E. W. Collins from Cleveland, was present and made an address, taking for his subject "Cable Pointers."

Early in January the regular annual banquet will be held at the Havlin Hotel when it is expected that a number of out of town managers will be entertained.

The Western Association of Old Time Telegraphers, a society lately organized to especially conserve the social fraternity interests of the Far West, held its semi-annual banquet at Spokane, Wash., on December 14. The programme in part was as follows: Address of welcome, T. P. McKinney, president; toasts to the absent members, those who have passed away since the last meeting; Elks' quartet; "The Operator in Business and Political Life," J. T. O'Brien; "The Humorous Side of Telegraphy," W. F. Straub; Elks' quartet; "Telegraphy in the '60s," H. G. Stimmel; "Telegraphy of the Present Date," O. D. Campbell.

General Mention.

E. N. Tyler, a Jacksonville, Fla., telegraph operator, was accidentally killed by the premature discharge of his gun while hunting, on October 21.

r. M. Fitzgerald, lately of the Baltimore, Md., Western Union office, has accepted a position in the Birmingham, Ala., office of the same company.

William Fry, chief operator of the Western Union Telegraph Company at Grand Rapids,

Mich., who has been absent for the last six weeks on account of illness, resumed his duties on December 4.

Mr. C. F. Sweeney, of Montpelier, Vt., a telegraph operator who has had considerable experience in the South and in other sections of the country, has received a Government appointment as operator on the Isthmus of Panama.

E. E. Hungerford, aged sixty-five years, manager of the Western Union Telegraph Company at Rome, N. Y., a position he has held for twenty years, died on November 28.

The Atlantic Insulated Wire and Cable Company, whose factory at Stamford, Conn., was recently burned, is erecting a concrete building, 82 by 350 feet, at that place. New machinery has been ordered and the contract calls for the completion of the plant within sixty days.

Mr. M. J. O'Reilly, of the Great North Western Telegraph Company, Quebec, Que., when renewing his own subscription a few days since, and sending us one for another gentleman, expresses his satisfaction with Telegraph Age, of which he has been a reader for fifteen years, and states that he wishes the paper the full success it deserves.

The land-and-building-fund committee of the American Institute of Electrical Engineers, of which T. C. Martin is chairman and George H. Guy, 114 Liberty street, New York city, is secretary, has issued an appeal for additional subscriptions to the fund, which is needed to provide for the Institute's share of the necessary real estate and equipment for the Engineering Building given by Mr. Carnegie. This share is \$200,000, and \$150,000 has been already subscribed.

A Record Message.

"Never was a newspaper despatch of corresponding length between New York and London sent in such fast time as that printed in the Daily Telegraph, London, on November 29," says that journal. "That despatch containing seventy-nine words was telephoned to the Commercial Cable Company's office in New York at 8.36 p. m., American time, and by 8.40 p. m. (1.40 a. m. English time) every word had been received on the other side of the Atlantic, over three thousand miles away. Even that time might have been reduced by nearly two-thirds but the telephone is not so reliable as the ocean cable, and too much haste on the telephone spelt disaster.

In order to appreciate this achievement of which the Commercial Cable officials may be justly proud, one must realize the processes involved. The message as written by your correspondent was on three separate slips of paper, the first 29 words, the second 35 words, and the last 15, making the total 79. The first was telephoned to the Commercial Cable office, in New York at 8.36 p. m. It was written out by a receiving clerk there and handed to a cable operator. Fortunately the company's fastest cable

(they have five) was clear and the matter was speedily placed on the wire. Transmission from New York to Waterville, in the southwest of Ireland, whence there is direct retransmission into the office of the Daily Telegraph, in Fleet street, is practically instantaneous albeit it goes first to Canso, Nova Scotia, after leaving New York where it is automatically repeated on the longest stretch of cable connecting Canso with Waterville. In a word, the first instalment of the message received from the telephone operator at the cable office in New York at 8.36 was in Waterville and being flashed to Fleet street by 8.37. The second slip of 35 words was practically in London two minutes later and at 8.40 the entire message had gone through—four minutes only from the time of reaching the telephone clerk in New York until the last word was flashed across.

"To the uninitiated it may seem strange that it takes incomparably longer to telephone a few sentences a couple of miles than to cable the same over three thousand miles but to such a degree of perfection has Atlantic cable transmission between England and America attained. The fastness of a cable depends chiefly upon the amount of copper core used in the cables, the heavier the core, the quicker the transmission. The cable used so satisfactorily on this occasion is laid underground from New York, is carried across the famous Brooklyn Bridge on hangers, thence after a few miles further underground goes under the Atlantic from Coney Island. The times I have quoted above are official. No smarter achievement of the kind in ocean cabling has ever been performed."

Socrates thought that if all our misfortunes were laid in one common heap, whence everyone would take an equal portion, most persons would be contented to take their own and depart.

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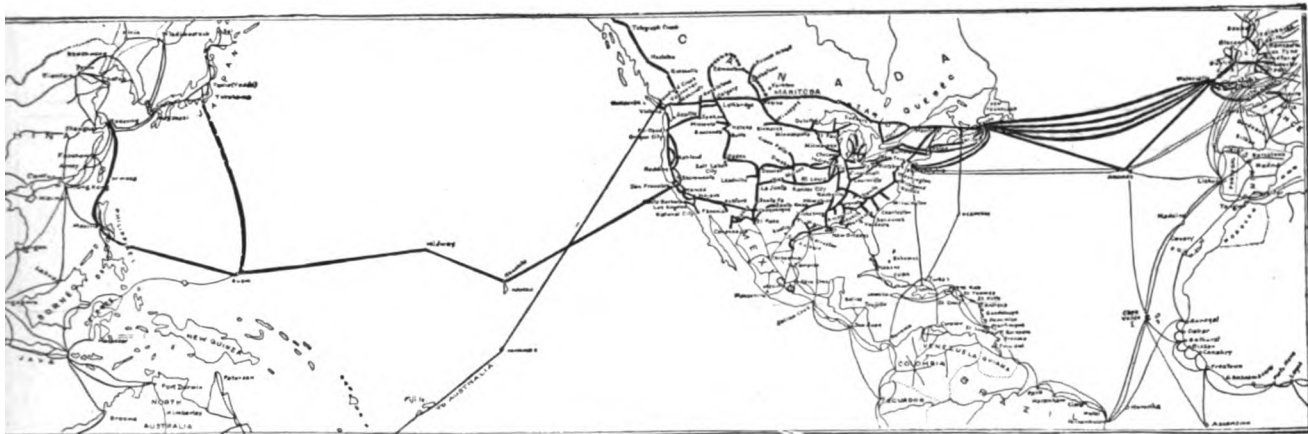
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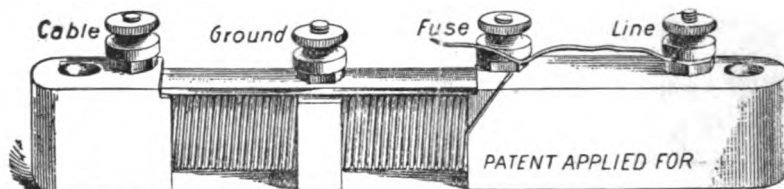
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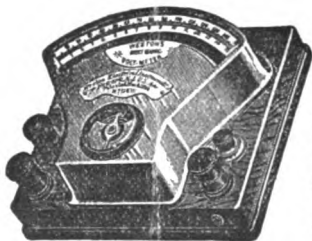
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